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*Riter-Conley Manufacturing Company*

STEEL CONSTRUCTION

*Pittsburgh*

INDEX TO CONTENTS, PAGE 160.

ADVERTISERS' INDEX, PAGE 26.

# THE UNITED GAS IMPROVEMENT COMPANY,

PHILADELPHIA.

—•—

## BUILDERS OF

## THE STANDARD DOUBLE SUPERHEATER

## LOWE WATER GAS APPARATUS.

—•—

ACCURATE MEASUREMENT

OF

AIR AND STEAM SUPPLY

(PATENTED),

AFFORDING { **PERFECT CONTROL OF GENERATOR FIRE CONDITIONS.**

PRODUCING { **UNIFORM RESULTS. HIGHEST EFFICIENCIES.**

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# THE NEW COAL GAS INSTALLATION AT FALL RIVER.

[From the paper read by C. W. HUNTER, before the New England Association of Gas Engineers.]

In 1912 the growth of the output of the Fall River Gas Works Company demanded increased generating capacity. The Company at that time was manufacturing only carburetted water gas in its plant at Pond street, and rising oil prices made it advisable to look into the question of manufacturing coal gas for at least a part of the send-out. A study was made of the latest developments in the process of coal gas generation in this country and abroad, and a comparison was instituted of the annual cost to the Company of :

1. Extending the old water gas plant and continuing the production of straight water gas.
2. Installing a coal gas plant of about 1,000,000 cubic feet daily capacity, which would supply about one-half of the send-out.

In making the comparison, the sum of the fixed charges on generating plant investment plus manufacturing cost, including current maintenance, was worked out for a water gas extension ; and also for four different types of retort systems, viz.: horizontals, inclines, intermittent and continuous verticals. The enlargement of the water gas plant was found to be impracticable and it was eventually decided that the carbonizing process that seemed best adapted to Fall River conditions was the intermittent vertical retort system as modified for American practice by the United Gas Improvement Company ; and a plant having a rated capacity of 1,050,000 cubic feet per day was contracted for.

In 1905 the Company purchased property on Mt. Hope Bay, at Charles street, and had erected a 2,000,000 cubic foot holder and a wharf extending out to deep water. This property, having both water and rail connections, presented an ideal location for the new plant. The installation was laid out for an ultimate coal gas development of 8,000,000 cubic feet per day, with space reserved for a supplementary water gas plant. The present plant consists of the first coal gas unit. The property is divided into two unequal parts by the Newport branch of the Old Colony Railroad, which runs along the edge of the bay. On the water side is located the wharf, coal handling plant and storage, the coal being conveyed over the railroad tracks to the retort house.

Permanency was one of the essential considerations of design. All of the buildings are of fireproof construction and, with the exception of the retort house, are of brick with flat concrete roof. The retort house is of 6-inch tile, suspended in the steel framing of the building. The steel work supporting the roof trusses and 30-hour coal storage bunker, is independent of the benches. A somewhat novel feature is introduced by taking up the wind strains through a horizontal wind truss, 8 feet deep, running completely around the building about 8 feet above the operating floor. This truss transfers the wind strains to the end walls where they are transmitted to the foundation through a system of diagonal bracing, thus giving large unobstructed space in the building with minimum weight of steel.

The retort house is located alongside the railroad track opposite the wharf, and space is reserved for an extension of three future houses alongside the track, with room for four more to form twin houses with the first row. The condenser house faces the retort house and will extend in a southerly direction ; the boiler house will extend easterly, and just opposite is reserved space for a water gas generator house. All the buildings are shown in the plan.

The general features of the United Gas Improvement intermittent vertical retort system have been described many times, so that only a brief review of the Fall River benches will be given here.

The installation consists of 7 benches of 9 retorts each, arranged in rows of three. The upper mouthpieces of the three retorts in each row are connected by bridge pipes, making practically one carbonizing unit of the three, so that the house is handled as consisting of 21 units. Each retort is about 18 feet long and of oval cross section, 12 by 22 inches inside diameter at top and 18 by 30 inches at bottom, and made of German material

General View of Charles Street Station.

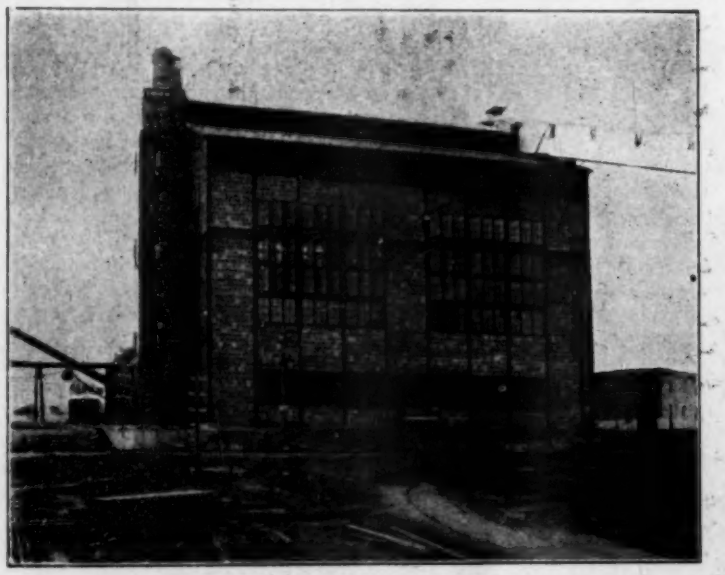
The retorts with their surrounding heating flues are supported on steelwork about 11 feet above the ground floor level. Just behind them are the recuperator sections, while at the back of each bench are the producers, extending from the ground level to a height of about 13 feet.

Suspended from the roof trusses is a steel bunker, running the full length of the benches in line with the retorts, which will hold enough coal to run the house about 30 hours. Over the center of each bench are coal valves operated by levers from the charging floor at the level of the top of the retorts. There are also seven pockets for coke breeze built inside the bunker, with a valve over each bench. Under the bunker and over the retorts runs an electrically operated larry divided into 3 coal compartments with corresponding breeze pockets. The centers of the compartments cor-

respond to the centers of the retorts in each row; and the charging operation consists of filling the larry with breeze and coal from the nearest valves in the bunker, running it over the retorts to be filled, and dropping in first breeze and then coal. About 3 cubic feet of breeze and 1,650 to 1,750 pounds of coal are usually charged per retort, the larry being arranged so that each charge of coal can be weighed.

Directly under the retorts, a hot coke discharging chute is operated on tracks extending the length of the house at the ground level. The chute is constructed of cast-iron plates hung on a steel frame, and has a slanting bottom. To discharge, first the upper lids and then the bottom doors (which are operated by hydraulic pressure) are opened, the hot coke dropping into the chute which diverts it into a DeBrouwer conveyor, by which it is carried to the coke handling plant.

The heating gas from the producers passes first to a combustion chamber about on a level with the lowest section of retort, where secondary air is added and the gas burned. The products pass around the retorts in a winding path to the top, then down through the recuperators and out to the stack. The so-called "$CO_2$-return" system of combustion is used; a portion of the waste gases drawn from the base of the stack by a turbine blower is mixed with an approximately equal amount of air and forced under the grates. The secondary air also is forced in, so the benches are operated partially under pressure. The secondary air and primary mixture are passed through Venturi meters before entering the individual benches, and the system is provided with valves and outside dampers to permit close regulation. The grates are of the hand shaking type, and the producers are fed with hot coke transferred from the hot coke bin by small cars with inclined bottoms.



Retort House.

Each bench has an individual hydraulic main with 3 dip pipes, one from each row of retorts. Constant circulation of liquor is maintained through the hydraulic, tar being drawn from the bottom by a balanced drainage system. The liquor level is regulated by a weir overflow, and during time of charging the seal can be raised rapidly by admitting liquor from a 600-gallon tank located in the roof trussses. The gas from the hydraulic is collected in the retort house header and passes through a governor to the condensing system.

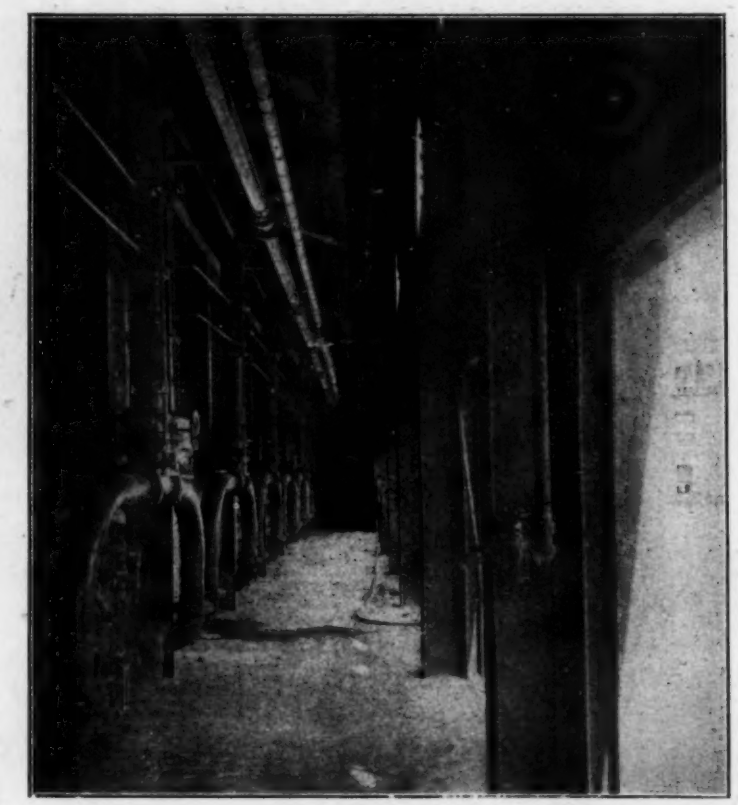
*Coal Handling Plant.*—Coal is received in ocean-going barges that dock at the end of the wharf some 465 feet from the retort house, The general ideas which we endeavored to incorporate in the design of the handling plant are: first, the protection of coal used in daily operation from the effects of weather; second, the utilization of the existing wharf, which is a square of approximately 200 feet to a side, to the best possible advantage for cold storage at the lowest investment cost.

With these ideas in mind, it was decided to erect a "running" storage bin of sufficient size to contain about 2,500 tons (approximately 1½ barge loads), which could be filled and emptied by gravity; and to store in it all coal intended for regular operation of the plant. An emergency store, mainly for use in case of prolonged interruption of service (such as a strike at the mines, etc.), is piled in the open.

The coal handling rig that worked out as best adapted for the ground is probably best described as a modification of the "mast and gaff" type. It consists essentially of a central structural steel mast, supported on a concrete foundation and held vertical by two stiff legs. From the mast are swung two horizontal booms, both of which may be moved completely around it as a center. The upper boom, which is about 118 feet long and at a height of 50

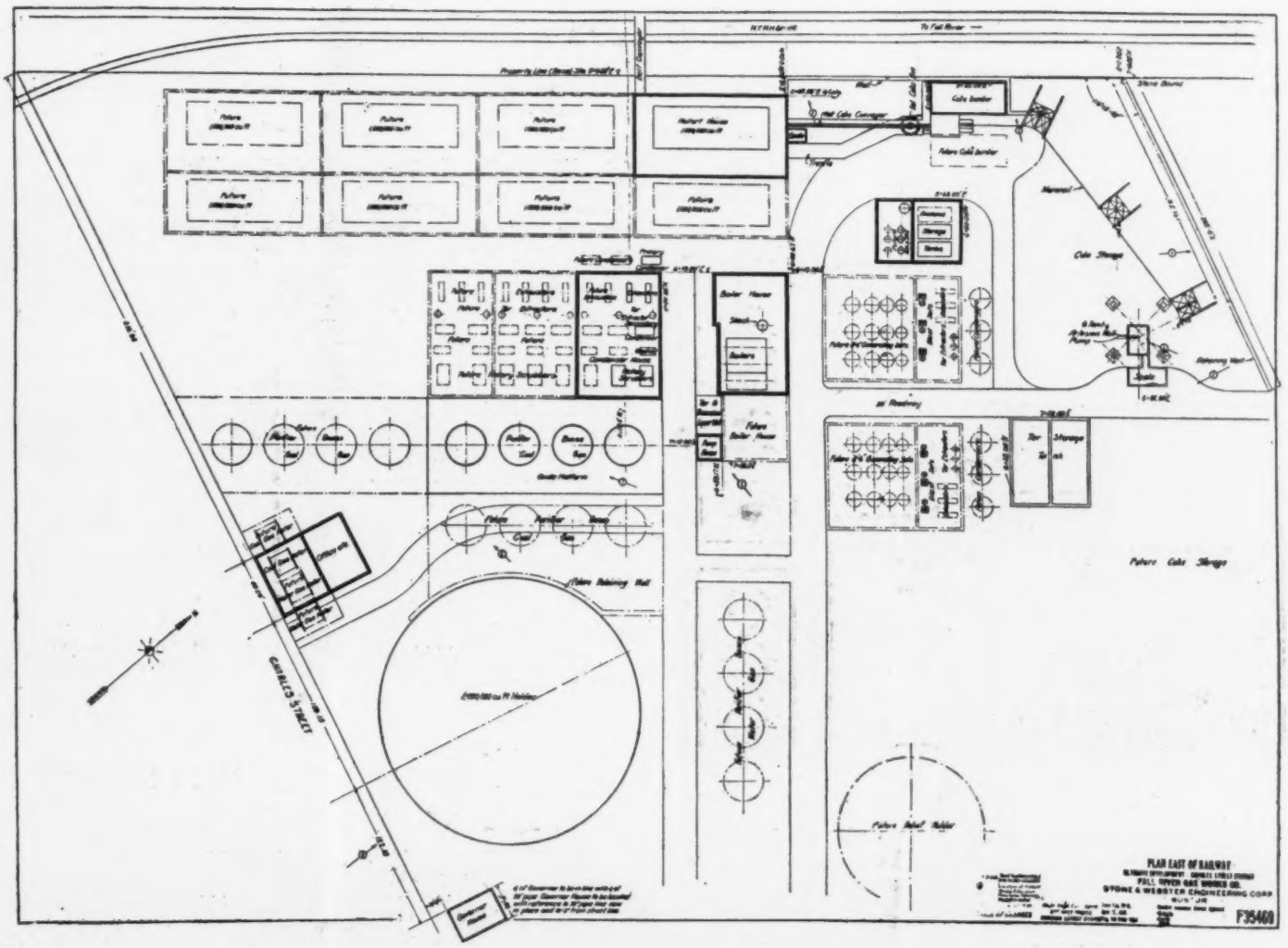
Charging Floor.

feet from the ground, carries a trolley track on which runs a 1⅝ yard Haywood bucket. In its normal position for unloading, this boom extends over the barges at the end of the wharf, but by swinging it around, coal can be reclaimed anywhere within the circular area around the mast. The bucket delivers the coal into a steel feeding hopper in the steelwork of the mast, from the bot-



Front of Producers.

tom of which it is fed onto a belt supported by the second boom that swings about 21 feet from the ground. This belt carries a tripper, and by turning the belt boom around the mast, coal can be deposited anywhere in a circular pile 20 feet deep around its base. The boom having about 110 feet working radius, about 13,000 tons can be placed in this outside storage pile. For regular running, however, the belt boom is set over the crusher, through




Works' Plan : East of R. R. Tracks.

which the coal passes to an inclined belt system that conveys it to the top of the running storage bin, which is a circular concrete structure 50 feet in diameter with conical bottom. Each morning the day's supply of coal for the retort house is conveyed by the belt system across the railroad tracks to the 30-hour storage bunker over the retorts. The coal handling plant is operated by electricity, and has a capacity of 100 tons per hour.

*Coke Handling Plant.*—Coke from the retorts is discharged into a 30-inch DeBrouwer conveyor designed for hot coke, is conveyed to the end of the building and then up an incline to the top of the coke bunker, where it passes through a crusher and then over a vibrating screen for separation into the various sizes. The bunker itself is a reinforced concrete structure of about 200 tons capacity, located beside the railroad spur leading into the plant, and by gravity, railroad cars can be loaded on one side and coke wagons or trucks on the other. Directly underneath the bunker are bagging chutes and storage platforms for bags.

The coke for storage is handled by a remote control monorail system with a self-tripping bucket. This consists of a trolley carriage, with hoisting motor, that runs on the lower flange of a 12-inch I-beam supported 40 feet from the ground. The trolleying and hoisting movements are regulated from a controller located on the ground at tbe coke bunker, and are handled by one man. The bucket is filled from the wagon loading chutes at the bunker, raised and conveyed out to the storage pile, where the bucket trips when it comes in contact with the pile, allowing the coke to spill out without excessive fall.

The coke from the retorts is quenched as it passes through out the wall of the building and the steam is carried away through a vapor stack. About half way up the incline and directly under the conveyor is a circular steel bunker lined with firebrick, into which, at intervals, hot coke is deposited, to be charged into the producers.

*Condensing and Purifying System.*—The gas leaving the retort house flows to the condenser house through an underground main and passes successively through the following equipment; primary condenser, exhauster, P. & A. tar extractor, secondary condenser, immersion washer and rotary scrubber. The pressure of the gas leaving the retorts is controlled by a retort house governor and a Huntoon governor attached to the exhauster. The temperature of the gas is automatically controlled at the outlet of the secondary condenser by a temperature regulating device which keeps the gas entering the rotary scrubber at any specified degree. The condensers are divided into compartments, so arranged that the number may be adapted to the number of benches in operation, keeping constant the ratio between cooling surface and the quantity of gas cooled.

Leaving the condenser house the gas passes through four 23-foot diameter by 12-foot high circular copper-steel outside purifiers. Each box is insulated from the weather by an 8-inch brick wall and 2 inches of cork on the side and a 4-inch layer of asbestos on top. They are of the reversible flow type with 20-inch gate valve connections. Each box contains two 5-foot layers of oxide, the gas passing in at the middle and out at the top and bottom of the layers or *vice versa*. They are filled by a small portable bucket elevator, which by means of a chute, deposits the oxide in the center of each layer, where it is distributed by one man. Each layer is discharged throngh four 30-inch square outlets.

From the purifiers the gas flows to the meter house and passes through the 12-foot station meter to the main outlet header from the plant, which is designed to eventually receive the entire output of the completed plant and to be the point of mixing coal and water gas. At present the coal gas flows to a 2,000,000-foot holder, and is there mixed with water gas which is pumped from the Pond street plant. From the holder the gas passes through a 24-inch balanced and a 24-inch automatic governor in series, to the main system.

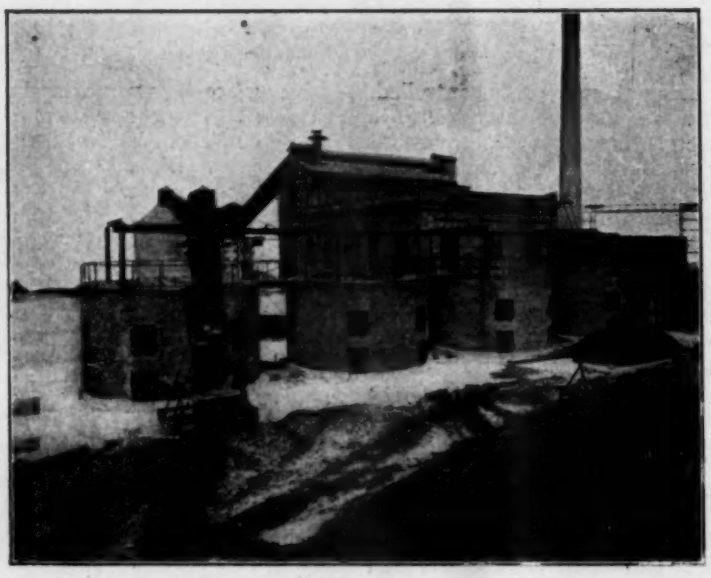
Water for condensing purposes and boilers is obtained from an artesian well, driven on the property, which feeds a 50,000-gallon storage tank, elevated 90 feet. The power for driving the coal and coke handling plant is purchased from the local electric light company. Steam for the exhausters, etc., and heating is furnished by two 150-horse power H. R. T. boilers fitted with Parson's grate system for burning coal and coke breeze.

The tar and liquor from all parts of the plant, except the retort house, flow to a concrete underground gravity separator containing

the usual tar and weak and strong liquor compartments. From this the tar is pumped to an underground storage well and the liquor is concentrated to 15% strength for tank car shipment. A thermostatic control, operated by water pressure, has cut the labor on the concentrator from the constant attention of one man to intermittent visits by the boiler house fireman. The flushing system from the hydraulic main drains to a concrete well just outside the retort house; the liquor is circulated back to the hydraulics, only the excess tar and liquor being pumped to the separating system.

Coke Handling System.

The meter house contains, besides the meter room, the superintendent's office on the first floor and, on the second, a laboratory equipped to make all tests necessary for the economical operation of the plant.



Purifier Boxes.

*Test Results.*—The first retort was charged May 3d, 1914. and on July 13th a 30-day test was commenced to establish the guarantees made by the bench contractors. During the test the benches were operated by the contractors' engineers and the rest of the plant by the Gas Company. An extra force of engineers was employed to check results, the laboratory work being done by an expert from a firm of consulting chemists. All of the instruments, scales, meters, tanks, etc., used were carefully calibrated before the test was begun and the photometer bar was checked by several independent observers. Each charge of coal put into the retorts was weighed, a sample taken and its moisture determined, while the average of each day's samples was analyzed in the laboratory. Each buggy of coke charged to the producers was weighed and the fires at the end of the test were brought to the same condition as at the beginning, before making final measurement. The ashes were screened over a ¾-inch sieve and the unburned carbon returned to the fires. No regular method of weighing the total amount of coke produced from the benches was available, but six tests were made, in each of which the coke dropped from three retorts was weighed, screened by hand and the ratio of the coke to the original charge of coal calculated. The candle power of the gas was measured on a Sugg "D" burner against a standard pentane lamp every hour during the twenty-four. Hygrometer tests were taken to determins the hydrocarbon vapor dew point of the gas. The temperature and the volume readings of the gas were taken at the station meter every hour. The tar and ammonia liquor were drained into separate concrete wells and measured and analyzed each morning, while the gas leaving the benches was tested analytically for its $NH_3$ content to check the works' measurements.

During the test no extraordinary methods of operation were used in order to raise the general results. The retorts were thoroughly scurfed before starting and only a little burning-out had to be done. Except for this and also a certain amount of extra supervision, the plant was run as it will be in regular operation. The average temperature in the hottest part of the combustion chamber was 2443° F. with a maximum of 2570° F. and a minimum of 2318° F., as read by a Wanner pyrometer. Three-quarter inch screened Westmoreland coal was used, of the following average analysis:

| | Proximate Analysis. | |
|---|---|---|
| | As Received. Per Cent. | Dry Basis. Per Cent. |
| Moisture | 2.15 | ..... |
| Volatile | 33.80 | 34.54 |
| Fixed Carbon | 57.50 | 58.77 |
| Ash | 6.55 | 6.69 |
| | 100.00 | 100.00 |
| Sulphur | 1.14 | 1.16 |

The average results for the 30 days were as follows:

| | |
|---|---|
| Gas produced per day, corrected to 30 inches and 60° | 1,083,000 cu. ft. |
| Gas produced (corrected to 30 inches and 60° F.) per pound of coal, dry | 5,434 cu. ft. |
| Gas produced (corrected to 30 inches and 60° F.) per lb. of coal, as charged* | 5,314 cu. ft. |
| Candle power on Sugg "D" burner | 16.71 |
| Candle feet per pound coal, dry | 90.80 |
| Candle feet per pound coal, as charged* | 88.80 |
| Ratio bench fuel to coal, dry | 14.19 per cent. |
| Ratio bench fuel to coal, as charged | 13.88 per cent. |
| Ratio total coke to coal, dry | 71.6 per cent. |
| Ratio total coke to coal, as charged | 70.6 per cent, |
| Ammonia produced per 2,000 pounds coal, dry | 7.3 lbs. |
| Ammonia produced per 2,240 pounds coal, as charged | 7.98 lbs. |
| Tar produced per 2,000 lbs. coal, dry | 14.70 gals. |
| Tar produced per 2,240 pounds coal, as charged | 16.1 gals. |
| Averaged specific gravity of gas | 0.4355 |
| Average H. C. dew point | 55° F. |

* That is, including moisture.

The plant was turned over to the gas company for operation during the latter part of August, since which time they have been trying out a number of different kinds of coal. The results for 6 months taken from the monthly operating reports from July 1st to December 1st, 1914, are as follows:

| | |
|---|---|
| Gas produced per day, corrected to 30 inches and 60° F. | 1,013,000 cu. ft. |
| Gas produced per lb. coal, as charged (corrected to 30 inches and 60° F.) | 5.17 cu. ft. |
| Candle power on Sugg "D" burner | 16.7 |
| Candle feet per pound coal, as charged | 86.3 |
| Ratio bench fuel to coal, as charged | 14.3 per cent. |
| Gals. tar per 2,240 lbs. coal, as charged | 15.15 gals. |
| Ammonia per 2,240 pounds coal, as charged | 6.64 lbs. |

From January 3rd to January 24th, 1915, ¾-inch screened Westmoreland coal only was charged with the following results:

| | |
|---|---|
| Gas produced per day (corrected to 30 inches and 60° F.) | 1,021,000 cu. ft. |
| Gas produced per lb. coal, as charged (corrected to 30 inches and 60° F.) | 5.36 cu. ft. |

| | |
|---|---|
| Candle power on Sugg "D" burner... | 15.97 |
| Candle feet per pound coal, as charged. | 85.54 |
| Ratio bench fuel to coal, as charged... | 14.18 per cent. |
| Tar per 2,240 pounds coal, as charged.. | 17.1 gals. |
| Ammonia per 2,240 lbs. coal as charged. | 7.22 lbs. |

In comparing the actual operating results with the figures obtained during the test, it should be borne in mind that the 6 months' figures were made on three or four different kinds of coal, and that the retorts were scurfed at the rate of about one bench a week.

*Miscellaneous Operating Features.*—The retort house labor amounts to about the following:

| | Per 24 Hours. |
|---|---|
| 4 regular operators at 11 hours per day | 44 hours. |
| 2 laborers (cleaning ash pits, cleaning hydraulics and sweeping building) at 10 hours per day | 20 " |
| 1 laborer elevating breeze to overhead bunkers | 8 " |
| Scurfing per day | 1 hour. |
| Regulating heats | 8 hours. |
| | 81 " |

On the basis of a 12-hour day, this equals 6.75 men, or about 150,086 feet per man per day. The work performed includes all operations in the retort house except depositing the coal in the 30-hour overhead bunkers and handling the coke after it has passed out of the retort house. It is necessary to scurf each retort about every 7 weeks. The hydraulics, which are fitted with pitch pans, are cleaned out once a week. For one week, out of 819 retorts discharged, 128 or 15.6% stuck so as to require some poking from the bottom before they dropped. The amount of poking required was very slight, in no case lasting over 2 or 3 minutes. The cause of this sticking can nearly always be traced to the presence of a pocket of fine coal in the retort or the condition of the coke breeze used in the lower mouthpiece.

The benches have been operated with from 9 to 9½% of $CO_2$ in the primary mixture entering under the grates. It is found that the heats on the benches can be lowered or raised very accurately by changing this percentage. The retort house operators shake the producer grates about four times a day, the ashes being removed and screened by a laborer. No clinkering has been done since the plant started last May.

The coke made is of excellent color and structure weighing about 32 pounds per cubic foot. The tar is thin and easily handled, an average of one week's samples analyzing as follows:

| | |
|---|---|
| Specific gravity | 1.127 |
| Moisture (by volume) | 3.4 % |
| Free carbon | 3.74% |
| B. T. U | 15,944. |

*Distillation.*

| | |
|---|---|
| Up to 338° F | 8.00% |
| 338° to 437° F | 12.30% |
| 437° to 518° F. | 10.30% |
| 518° to 680° F. | 23.00% |
| Balance | 48.50% |

This analysis shows about 8.00% of light oils and 45.6% of creosote oils. The samples were taken during the test from the tar chamber of the separating system and run rather high in moisture. The last shipment made from the plant consisting of 150,000 gallons had a moisture content of 1.3%.

Four samples of gas aualyzed during the test averaged as follows:

| | Per Cent. by Volume. |
|---|---|
| $CO_2$ | 1.2 |
| $C_2H_6$ | 0.9 |
| Ill | 4.1 |
| $O_2$ | 1.0 |
| CO | 6.9 |
| $CH_4$ | 28.8 |
| $H_2$ | 51.9 |
| $N_2$ | 5.3 |
| C. P | 17.2 |

From several tests taken the gas appears to contain from 10 to 15 grains naphthalene per 100 feet, at the meter. No indication of a stoppage has yet been seen. Tests on 11 days during the period January 3–24, 1915, show a calorific value of the gas of 608 B. T. U.'s and a calorific multiple of 3,269 per pound of coal as charged, the average candle power on these days being 16.1.

## Relations With Customers.

Some of the Discussion on the Report of the N. C. G. A. Committee on that Subject.

MR. C. N. STANNARD said he had spent practically an entire day going over the report, and felt it was one of the most valuable contributions presented to the Association. Reference was made to charging for a service where the distance beyond the curb exceeded 50 feet. It had been the experience of some companies that they could very profitably and without much complaint on the part of the consumers, charge from the curb in all cases. One company where formerly free services were customary now only gave free from the main to the curb, and charged for the service thereafter; and more services had been installed under the charge system than under the free. There were no complaints from the public, because they hardly expected a gas company to do more for them than they would expect a water company or the sewer authorities to do in making connections with buildings.

He liked the suggestion that when a customer moves to another city, a letter be presented from the company in the first city, certifying the credit to be good. It might be well to do this so that the customers might know that the practice was in force. Generally the companies were willing to do it, and it would save considerable embarrassment and would work out well for all concerned.

He heartily approved of refunding deposits. He would go a step further and suggest that refunds be given to representatives or salesmen and have them see if they could, for that money, sell additional gas appliances, thus keeping the money in the company's possession.

Concerning prizes to be given employees for leads; he knew that in order to maintain interest in such matters, some companies found it advisable to give a prize every month, and with an additional percentage given at the end of the year, interest had been maintained during the entire year and a great many leads had thus been closed.

Concerning overpayments; he would notify a representative of the overpayment, and if the customer desired the money refunded he would give it to him; otherwise he would try to interest the consumer in some new gas consuming appliances.

As to delinquent notices; the suggestion was made that the notice be in the form of a polite invitation, and he most heartily recommended this. He did not believe in offending those who were "good pay" but who, by some unusual condition, might find it impossible to pay at the usual time. The gas company should be most careful in this matter.

Chapter Five deals with the Meter Reading Department, and he asked the members if they ever stopped to consider that frequently the meter reader is the only man from the company who comes in contact with the consumer. The meter is read, the bill sent in, and perhaps a check is mailed in payment, and such consumers do not meet any representative of the company except the meter reader. He considered that gas companies should select their meter readers with the greatest possible care, and that meter readers should be most careful when they come in contact with the public to give the right impression.

He is a great believer in the Cashier's Department being so located that the Complaint Department is not near the cashier's cage. He wanted to get the real complaints, but not complaints of the bill being 10c. higher than it was last month and other similar complaints.

Considerable stress should be placed on the appearance of collectors, as on the the appearance of the cashier. They should present a neat appearance, and be very careful and diplomatic, for they have an opportunity of making friends for the company or gaining the consumer's enmity.

It is suggested that the High Bill Department have suitable booths or rooms where one making a complaint can receive particular attention from the complaint man. He thought this to be a good suggestion; and knew one company, the Consolidated Gas, Electric Light and Power Company of Baltimore, had very successfully followed this scheme. He had been asked to speak about the consumers' ledger account containing not only the information referring to consumption, amount, etc., but also that it should have a place for merchandise accounts. Some companies were doing this very successfully. Most companies had separate accounts, but he believed in the combination. In his company the combination account was not practical, although for some other companies it was very successful *in operation*.

MR. C. W. HARE believed that there was no more important topic than the relations which the gas interests occupied with their

customers, present and prospective. One thing that has an important bearing on our relations with our customers is the question of credits. For a number of years we have shown conclusively that the public is willing to pay a fair price for a good article, and as the customers' willingness becomes more apparent, it is all the more necessary for gas companies to extend liberal credit to them. Mr. Decker explained that the banking system of the country was built on credit, and that the average citizen is honest; and this has also been the experience of gas companies. The question of allowing extended credits has a particular significance at this time because there is more or less business depression, considerably less in the West than in the East, but even in parts of the West there are businesses not as prosperous at the moment as they were six months or a year ago. Under these conditions, the question arises as to the advisability of continuing the system of extending credit to consumers in the purchase of appliances. Liberal credit has been the backbone of our system of popularizing gas appliances and increasing their sale, and to limit the period of payment under existing business conditions would be withdrawing from our customers the means by which the majority of them were able to purchase appliances, some of which are almost necessities. It does not seem to our best interests to withhold, in such times, the help that we have extended for years, and to his mind, this is a time when the gas companies, rather than curtailing credit, should extend it to all customers whose records showed them to have made payments consistently, and who had been honest in their dealings with the gas company. Mr. Young, in the report, dealt with collections and that is a most important branch of the system when liberal credits are in effect.

His company extends credit on appliance sales over a period of 12 months, and to-dav, after 3 or 4 months of depressed times, collections are better than ever before. That did not mean that it was as easy to collect as it had been. It was harder; but the money is coming in, and the people are doing their level best to live up to their contracts.

MR. ARTHUR HEWITT stated that if he had not himself been a member of the Committee, he would say that congratulations should certainly be extended to them for the report presented. It was practically a text-book, and could be used by any company that wanted to improve whatever system they might be using.

Some companies operated the appliance and complaint departments separately and independently. Mr. Stannard had emphasized the wisdom of keeping complaints away from the cashier. He (Mr. Hewitt) would emphasize the wisdom of keeping complaints away from the order department. In his judgment there was no logical reason for applications and complaints being received by the same department.

He thought that service should not be withheld for credit investigation; the investigation might be made after service had been given, through representatives of the new business department. It might be interesting to note that in Toronto, with a revenue from gas sales of $2,500,000, the loss from unpaid accounts last year amounted to only $6,053, or ¼ of 1%, notwithstanding the fact that of the total applicants for gas last year, only 1.74% were required to furnish a cash security (average amount of deposit, $7.45) and but 5.5% personal guarantees. He did not favor giving the service without applicant's signature to a contract, with a chance of added expense of turning on and turning off, and the probable non-collection and subsequent credit investigation to establish responsibility for gas used in the interim.

He considered the reviewing of completed complaint orders one of the best paragraphs in the report; but considered that clerks receiving complaints should give an intelligent synopsis of the complaint, rather than reducing it to a phrase "High Bill," "No Gas," "Insufficent Supply." He would suggest further that fitters especially, and employees generally, make a full report while "on the job," as a good memory cannot be filed in the record cabinet.

With regard to the case of complaints on a high bill, where there might be a request for a change of meter, he would suggest, instead of taking the meter out on request, that the customer be required to take the course provided by the law in Canada, applying to the Government Inspector, after the company had made a thorough inspection, to have the meter inspected and proved. Should the meter be found correct, the cost of the test must be paid for by the consumer. Should the meter be wrong, whether fast or slow, the onus is on the company. He did not consider it good policy to change a meter the accuracy of which was questioned without first proving to the consumer on an independent official test, whether it was accurate or not, and that there was no disposition on the part of the company to make him pay for something which was not honestly due. The gas meter is an accurate measuring instrument, and every chance should be given to prove it, in case of dispute, by fair and independent test.

MR. R. C. JAMES said the installment plan of selling merchandise, and giving a long time for payment, with liberal credit, had been gratifying in showing that most gas consumers are honest, and would go to any extent to keep their contracts alive; that it was the duty of the collection department to so organize its system that collectors would be on hand to collect the amounts when due, whereby the people would be educated to expect them always at a certain time, and if the collection deparment did its part in keeping up collections by a systematic, accurate method 95% or more of the customers will pay their bills. He repeated Mr. Hare's report of satisfactory collections during the last six months, in spite of depressed business conditions.

Concerning the importance of the order and complaint clerks, meter readers and collectors, he said there was a time when a great many gas companies felt that the lowest paid man with the least experience was good enough to take orders. To his mind the order clerk should be one of the best equipped men in the office, thoroughly conversant with the general business of the company, and having a general knowledge of the work of other departments: he should be familiar enough with the various appliances and the time required to connect them, to be able to answer intelligently the probable time it would take for appliances ordered to be conconnected; and must be very diplomatic in his dealing with the public.

Meter readers should be men experienced in the work; they should be taught scientific reading of meters, so as to insure a minimum of errors; they should be of good appearance; be able to answer questions intelligently, and not appear to be in such a hurry that they cannot take the time to do it. The meter reader reaches a mass of customers that the office and management never see. If a consumer complains about the service, the meter reader should have a memorandum pad, so as to intelligently transmit the complaint to the office. In case of a leak, he should go to the nearest phone and advise the office immediately. Continuous meter reading calls for specialists. As a rule the men who do this work are not fitted to do clerical work. One very important thing in rendering bills is to have as few mistakes as possible in meter readings. Continuous meter reading has been thoroughly tried out and tended to make for efficiency. It takes the burden of the rush period off the company; it gives the office a chance to get the work out easily and smoothly, and lessens the number of clerks necessary. One thing to be borne in mind, is that a company starting continuous meter reading cuts off a certain amount of income. If meters were being read from the 20th of the month to the 25th or 28th, and then are arbitrarily read continuously, it would cut off from 10 to 12 days of that year, and therefore meant that much loss of revenue, as in the year's statement only about 355 days' income would be included against the whole years operating expenses.

The collectors for a well-regulated public utility should be men of considerable tact and resource. Specialists should be developed for these positions and gradually a higher class of men worked in. He was confident that by developing a better type of collector on a higher salary, the total cost for collections would show a reduction in cost per meter and per thousand, notwithstanding the fact that collections would continually become more intricate and difficult, occasioned by selling on long term installment plans necessitating constant vigilance in following up consumers who moved perhaps several times before appliances were finally paid for. Many believed that young men make good collectors, but he thought a good collector had to be mature, although age has not so much to do with it as experience. A man of, say, 24 or 25, would make as good a collector as one of 35 if he had 4 or 5 years' experience. There is nothing to hinder a young man becoming a diplomatic expert any more than a man 10 or 12 years older.

MR. WILLIAM M. HALSEY believed that a copy of the report should be placed in the hands of every employee, as Mr. R. R. Young did last year, and let it sift down to those who needed the information contained in it. The condition of improved collections over the previous year seems to be quite general, and he considered this subject related to customers, in that if one did not collect the money, one could not sell service to the customer. He believed good buying customers meant good conditions, and good conditions meant pleasant relations.

MR. E. N. WRIGHTINGTON asked about adjusting complaints of high bills, particularly of an extremely high bill, one that was four or five times the average, following by bills of the previous average. What should the company do in adjusting a complaint of that kind, and as a matter of policy should any compromise be made or

allowed, or should we stand for the full amount on the ground that the meter had registered correctly and that no error were found in the conditions surrounding the account? He also wanted to know what the attitude of a commission would be on any compromise of an account.

MR. EDMUND A. MARTIN thought the very efficient results in our collections in the last 6 months was because we needed the money. In that part of the report which had to do with forms for contract main extensions, there were three forms shown. This matter had been taken up by the President of his company and a form finally adopted that could be used in all cases. He noticed all of these forms began, "If you will at your own cost and expense extend your main from —— and to ——;" not stating upon what street extension is to be made, as: "If you will at your own cost and expense extend your main on —— street from —— and to ——,,' He found no provision to reimburse the company in case the grade of street were changed, requiring the taking up or lowering of the main during the life of the contract. His company had a clause in the contract covering that point. If the mains and services had to be relaid because of a change in grade, and if there is any balance on the contract left in the hands of the gas company, the charge for extending the mains and services is so secured that the consumers get the difference between that and the cost of relaying the mains and services.

He did not think anyone in the New Business Department could give a prospective consumer the cost of an excess service. Their idea of the way the service would be run by the Service department would differ considerably in most cases, causing more or less bickering. A representative of the Service Department should be asked to look over the situation and advise the New Business Department what the cost would be, with a sketch made by him at the time showing measurements and cost accurately figured, which the New Business representative should give to applicant. In this way, possible disputes and trouble with the consumer over excess service costs were eliminated. In industrial installations, they found it gave satisfaction and tended to breed confidence in the company to have a representative of the New Business Department read the meter every working day for 30 days. In hotel or restaurant installations, the chef or party at the head of the business was given a copy of these daily readings. After the 30 days, weekly readings were furnished. An applicant of similar nature could be handed these daily and weekly readings, and asked to look the installation over and verify the figures given him. This dispelled ideas of high gas bills, and was absolutely correct information.

Concerning the dress of meter readers, he believed that a neat serviceable khaki uniform, washable, was probably the most suitable.

MR. H. K. DODSON said that in Baltimore they had made a canvass of the houses in which services had been installed and gas not used. The men were given authority to collect first payments on outstanding accounts as well as on appliances purchased. The canvass had proven a success. Quite a number of accounts had been re-opened and discontinued services put in use.

They often received complaints of noisy meters, but the question of changing meters at the customer's request should receive most careful consideration. There were many cases in which the meters were of insufficient size to take care of the maximum demand, but would take care of the general demand. They had given this subject serious consideration, and he would like to know what method was used by the companies here represented in determining the size of the meter and the details of the change.

Referring to the merchandizing accounts being placed upon the consumers' ledgers; they had never felt it necessary to have a separate set of ledgers for merchandise. Such sales were placed on the same folio with the gas account. When sold on 30 days time the completed orders were placed in pigeon holes, one for each ledger. At the end of the month, the orders were removed and entered on a billing form and posted on the ledgers, these bills serving as statements of accounts and being attached to and delivered with the gas bills.

MR. JOHN G. LEARNED referring to the High Bill Department, thought the Complaint Department should really be called the "Information Department," or "Investigation Department." He considered that the employees should be educated in the same way as the public, and not inocculated with the idea that the company had a large number of high bills and complaints of all kinds.

MR. J. H. BRAINE spoke of the Distribution Department and the ability at all times to answer inquiries about the status of an order. He found one or two of the larger companies were using what they called "Pending Order Files," or "Current Order Files," and had hoped that some members would express their views on this. He believed there were comparatively few companies using such system and he asked for comments.

MR. J. B. MYERS referred to the representatives carrying record cards. Several years ago, in Philadelphia, they had the men working on the streets make a comprehensive card for each house visited. The card covered the name, address, number of lights, details of piping, etc. Each man had about 20,000 people to take care of, and approximately 5,000 meters to look after, and they made a house-to-house canvass at certain periods. They found that this method was somewhat of a burden to the representative, and they cut down the card to the name, address, the prospect and date of next call. This card was also used by the advertising department. They found by doing this they were able to cut out one clerk in each district of the city and the man did better. They sold more appliances, as they had more time to canvass.

He noticed the report recommended that companies operate the point system for sales representatives and should extend the system to the representatives of the Distribution Department in order to encourage them. Philadelphia had experimented along those lines in one of their districts, and the number of prospects they got in addition to their regular business was astonishing.

MR. H. H. NEWMAN said it was not enough for the companies to receive and attend to complaints, but the causes of complaint should be sought and remedied. Reviewing complaints should not be left to the office-boy. As regards the progress of orders, the gas company should be able to tell the consumer just what has been done, and what it proposes to do, and then live up to the reply given.

Mr. W. H. PETTES said "Uncompleted Orders of To-day" should be placed on the list to-day and take precedence to-morrow.

MR. W. H. ROGERS said the duties of fitters bring them into such close contact with consumers that their behaviour must have important influence upon results of new business work. He considered that companies should give considerable attention to developing the same politeness on the part of the fitter as of other employees. He believed that many operating managers were among the best of new business men, and that fitters also should be trained along these lines

### CHAIRMAN R. R. YOUNG'S REPLY TO DISCUSSION.

He considered one should not forget that each employee should be educated in the work of all departments. This would give the customer the impression that the employee knows all about the business, and it gives the customer greater confidence if the questions put to the employee are answered intelligently.

We should watch the collection department, and by this he meant even the new business man. The bookkeeper, in keeping his accounts clean, is liable to issue an order to have an applience returned if the account is not paid. He would insist on this account being turned over to the New Business Department, before the order is issued to have the appliance taken back for non-payment. He considered it very important to have a high-grade man in the order department. The clerk should be trained and a man of intelligence, able to answer intelligently questions which come over the counter or received by telephone. Too often companies employ the first man that comes along for this departmeut.

In answer to Mr. Wrightington's question concerning the adjusting of high bills: The company should stand by its guns absolutely if the meter is found correct. In following up that kind of work a company should have trained men. The high bill inspector should be recruited from the New Business Department, because they would know the consumption of various appliances and be able to detect any excess consumption. The Public Utility Commission has supported his company in every case where the meter was found correct In reply to Mr. Martin concerning service application being measured up by the New Business Department, the paragraph in the report was not quite correct and should be stricken out. In cases where the service is longer than 50 feet beyond the curb, the service order is sent to the Distribution Department for execution and they fill in the amount of the extra service, and the office charges it to the consumer. He emphasized the importance of impressing upon employees who answer complaints, the fact that the meters are accurate.

He considered "Pending Order Files" very important and referred to the method used in Chicago, where "Why any particular work had not been completed?" and "When it could be completed?" could be answered within two or three minutes.

Concerning the "Point System" for fitters, the idea in his company was to commercialize every employee, not only fitters, bookkeepers and collectors, but every man, right up to the heads of departments, so as to make all act as one unit in getting additional business and in giving good service to consumers.

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A. M. CALLENDER, Vice-President and Treasurer.
CHARLES H. WADELTON, Secretary and Manager.

SANFORD K. CAMPBELL, Editor.

NEW YORK, MONDAY, MARCH 8, 1915.

### You Must Keep the Lighting.

In the paper treating on gas lamp maintenance read by Mr. Conroy, at the meeting of the New England Gas Associatian, he said:

"We all know that the early promise of the markets for domestic and industrial fuel was so alluring that the lighting business was almost abandoned to our electric competitors. But did the dream come true? It did not. For after 10 or more years of striving in every way to build up the sale of gas for domestic and industrial fuel, the best statistics show that still 50% of the artificial gas sold in this country is consumed for lighting purposes, while 35% goes for domestic fuel and only 15% for all industrial fuel and other purposes. Truly, the dream of something better than the lighting business has not been realized! And it is not likely to be, judging from present indications, for the electric companies are energetically invading both the other markets. Electricity is becoming more and more adaptable to household service, and the number of electric appliances in use for cooking and for heating is rapidly increasing. Gas men who have consoled themselves with the thought that, if they lose the lighting business they could make up the difference by fuel consumption, should bear this in mind. If, after all your efforts through these many years, beginning with a virgin field in the fuel business, you find to-day that 50% of your total output is sold for lighting, how long would it take you to fill up the gap if you should lose the lighting business? And remember, you would have to fight growing competition, step by step."

The following, clipped from a Western daily paper, is an alarming confirmation of Mr. Conroy' comment:

"The question of rates for heaters, as applied to water heating devices, and the rates for such equipment, is again brought before the Utilities Commission, and a hearing is in progress before a representative of that body. The action is brought at the instigation of the ———— Gas Company, which contends that the rate made by the ———— Water Power Company, on water heating apparatus, is unjust, and that it is too low, in consequence of which the gas company cannot compete with it. A more proportionate adjustment is asked."

Where will you turn if you lose your lighting business?

### High Pressure Gas Lighting at the Panama-Pacific International Exposition.

The Secretary of the Joint Committee on International Gas Congress delivered a brief address at the banquet of the New England Association of Gas Engineers at the annual meeting in Boston, in which he gave an outline of the situation at present, and called particular attention to the fact that Mr. T. C. Martin, the Secretary of the National Electric Light Association, who went to San Francisco to arrange for their annual meeting in June and who recently returned, had spoken in very glowing terms of the Exposition and particularly of the wonderful display of lighting, both by gas and electricity. At the conclusion of Mr. Ramsdell's remarks, Mr. J. B. Klumpp added the following:

"It might be of general interest to gas men to know that the gas street lighting at the Panama-Pacific Exposition is a great success. The high pressure gas lighting installed in the streets and pathways in the States and Foreign Building Sites, has been most successfully undertaken and carried out, as is evidenced by the following telegram received from Mr. G. L. Bayley, Chief of the Mechanical and Electrical Department of the Panama-Pacific Exposition, addressed to Mr. Arthur E. Shaw, President of the Welsbach Street Lighting Company of America:

"We had a trial last night of all the gas lamps in the States and Foreign Sites and the results were most gratifying. A number of Exposition and gas company officials were present and all agreed that it was the best street lighting they had ever seen. Many congratulations."

### National Commercial Gas Association Directors' Meeting.

At the Feburary meeting of the Board the following were present: H. B. McLean, President; Wm. M. Crane, W. W. Barnes, W. J. Clark, T. R. Elcock, Jr.. C. V. Roberts, P. S. Young, J. B. Myers, S. T. Wilson, Arthur Hewitt, T. M. Ambler, and Louis Stotz, Secretary.

Mr. P. S. Young, Chairman of the Committee appointed to nominate members of the Public Policy Committee for 1915, submitted the following named gentlemen, and their nominations were approved by the Board:

Edgar N. Wrightington, Boston, Mass., Chairman.
James L. Richards, Boston, Mass.
Thomas N. McCarter. Newark, N. J.
George B. Cortelyou, New York, N. Y.
Randal Morgan, Philadelphia, Pa.
Henry L. Doherty, New York, N. Y.

The Board unanimously approved the appointment of Dr. Lee Galloway as Chairman of the Board of Educational Control, and his engagement as Director of Educational Work. Mr. C. W. Pratt, for a number of years connected with the Minneapolis Gas Light Company, was added to the staff of the Association and will also devote himself to educational work.

A number of requests having been received from men desiring to take the new educational course, who do not wish to take the first part of the course, it was ruled that the course be so arranged as to make it inadvisable to allow students to wave any part of the study.

The idea of having a "National Gas Range Week" was endorsed by the Board, and the Chairman of the National Advertising Committee was given authority to contract for certain space in the *Saturday Evening Post* and *Literary Digest* to exploit this movement. The Board also approved the plan of Mr. T. R. Elcock, Jr., Chairman of the National Advertising Committee for 1915, to expend the balance of the first year's subscriptions in carrying half-pages in the *Saturday Evening Post* and the *Literary Digest*, and approved two drawings submitted by Mr. Elcock, to be used in connection with strong selling copy.

The President was empowered to employ a competent person to complete the Saleman's Handbook, so that it may be available during the current year. Several committees have been gathering data for such a handbook, but as it is such a large undertaking, it was thought advisable to employ some one who could devote all his time to completing the book.

*Mid-Year Conference.*—It was decided to hold a Mid-Year Conference in New York next June, this feature having been so successful last year. Plans will be prepared at once for this meeting, to which all members will be invited.

*1915 Convention.*—The special committee having visited Washington to make tentative arrangements, reported that the management of the New Willard Hotel had agreed to allow the use, without charge, of the ballroom, 175 feet x 45 feet, suitable for display, together with a large meeting hall and a number of committee rooms on the same floor. The committee also reported that the Washington Gas Light Co. would pipe the ballroom, install and connect the appliances and generally look after the details of the exhibition and entertainment. It was decided that under such favorable circumstances it would be well to have a small exhibit this year, but, owing to the limited space, to allow only one space to each exhibitor, a nominal charge only to be assessed against those exhibiting The President was empowered to appoint a convention committee, which will have charge of the exhibition and convention. It was also decided that there would be no morning sessions during the Convention, thus allowing time for the visiting gas men to inspect the exhibits, and also permitting the manufacturers' representatives to attend afternoon sessions. It was further decided not to admit the public to the exhibition except in the evenings, and then only by admission card.

More complete details of the Convention will be published as soon as the committee has opportunity to perfect its plans.

*Industrial Fuel Papers.*—The Board approved a plan of the Industrial Fuel Committee, to edit all the papers which have been presented on this subject, making each paper complete, including efficiency and operating data, descriptions of successful installation; and, in order of their importance, making these papers available to industrial men and for distribution to the various industries. Mr. Wilson, chairman of this committee, stated his committee would have something definite to report next month.

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BEAL MEDAL COMMITTEES.

NEW YORK, January 27, 1915.

MR. E. C. JONES, President, The American Gas Institute:

DEAR SIR: The Beal Medal Committee appointed by Mr. William H. Gartley to select the best paper presented at the 1913 Convention of the American Gas Institute has decided that Mr. O. B. Evans should be awarded the Beal Medal for his paper on "Carbonization of Coal in Vertical Retorts."

The committee was particularly embarrased in making the award by the difficulty of determining the relative merits of the papers, due to the variety of subjects discussed, and wish to point out that the same difficulty will be encountered by succeeding committees unless the gift of the Beal Medal be more specifically limited.

Respectfully submitted, W. CULLEN MORRIS, Chairman,
R. B. BROWN,
J. M. MOREHEAD.

The complete list of recipients of the medal is as follows:

1898—Henry L. Doherty, "How Can We Make the Use of Gas for Cooking More Universal?" A. G. L. A.
1899—Arthur G. Glasgow, "Carbureted Water Gas as a Coal Gas Auxiliary." A. G. L. A.
1902—I. N. Knapp, "Notes on Cement Masonry." A. G. L. A.
1904—Brewster H. Spangenberg, "Consumers' Meters." A. G. L. A.
1905—Henry L. Rice, "High Pressure Distribution." A. G. L. A.
1906—Wm. H. Gartley, "The Delivery of Uniform Candle-power to the Consumer Through all Seasons of the Year." A. G. I.
908—Walter Herbert Fulweiler, "The Physical Theory of Coal Carbonization." A. G. I.
1909—Chas. J. Ramsburg, "Sulphur Compounds in Illuminating Gas." A. G. I.
1910—Herbert W. Alrich, "Brick, Concrete and Steel Holder Tanks." A. G. I.
1911—Leigh E. Worthing, "Some Principles of Condensation with Especial Reference to Water Gas." A. G. I.
1912—Charles O. Bond, "The Photometry of Incandescent Gas Lamps." A. G. I.
1913—Owen Brooke Evans, "Carbonization of Coal in Vertical Retorts." A. G. I.

NEW ENGLAND SECTION NATIONAL COMMERCIAL GAS ASSOCIATION.

Over 100 members of the New England Section inspected their new quarters at the City Club, and attended the monthly meeting on Friday evening, February 26th.

A reception was held in the main hall from 5:30 to 6:30, after which the members sat down to a tempting dinner. At 8 o'clock the business meeting was called to order by President John L. Tudbury, who in a few well chosen words welcomed the guests and members, and introduced the first speaker of the evening, Dr. Lee Galloway, Chairman of the Board of Educational Control, who was given a rousing reception. Dr. Galloway spoke on "Commercial Education," holding the attention of the members for over an hour. He was followed by Mr. B. M. Nussbaum, Boston Manager of the Alexander Hamilton Institute, who gave a very Instructive talk on "New Business and How To Get It." The success of this meeting was largely due to the untiring efforts of genial Fred Wells, who located the Section in these comfortable quarters, and to Mr. Geo. P. Smith, Jr., Chairman of the Program Committee, whose selection of speakers and topics for the year is of the best.

For the March meeting, Mr. Harry Crafts, of Pittsfield, Mass., will present a paper on "House Maintenance." Mr. Crafts' experience along this line of effort enables him to prepare a paper of great importance, and a large attendance is anticipated.

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[OFFICIAL NOTICE.]

**Indiana Gas Association.**

OFFICE OF THE SECRETARY.
NEW ALBANY, IND., Feb. 4, 1915.

The annual meeting of the Indiana Gas Association will be held at the Claypool Hotel, Wednesday and Thursday, March 10th and 11th. Mr. A. C. Blinn, President, will preside.

On Wednesday evening, March 10th, a banquet and cabaret will be given at the Claypool Hotel, for which there will be a charge of $3.00 per plate.

The papers to be read are as follows:

"Appraisal of Public Utility Properties," by Wm. G. Woolfolk.
"Industrial Gas," by J. C. Shephard.
"Gas Rates," by J. H. Maxon.
"Application of By-Product Coke Ovens to the Gas Industry," by J. D. Forrest.
"Industrial Safety," by Chas. B. Scott.
"Comparative Costs of Gas and Electricity for Domestic Purposes," by B. K. Cash.

Members of sister associations are extended a cordial invitation to be present. Those connected with the gas industry in Indiana are especially urged to be present and render their assistance in making our association meeting a success.

JAMES W. DUNBAR, Secretary-Treasurer.

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**Illinois Gas Association.**

OFFICE OF THE SECRETARY,
CHICAGO, ILL., Feb. 8, 1915.

The tentative programme for the eleventh annual meeting of the Illinois Gas Association, which will be held at the Hotel Sherman, in Chicago, on March 17 and 18, is as follows:

"Experience with a By-Product Coke Oven Plant as a Gas Producer," by C. C. Boardman.
"Inclined Retorts," by R. B. Richardson.
"Use of Exhaust Steam and Its Possible Economies in a Small Water Gas Plant," by S. A. Reinhart and C. A. Schneer.
"The Use of Lead Wool as a Jointing Material with Especial Reference to a 26-inch Main," by C. E. Reinicker.
"How the Shops Can Assist the Commercial Department in Promoting Friendly Relations with the Public," by H. E. Turner.
"The Immediate Gas Engine Business," by H. W. Edmund.
"Medical Work of the People's Gas Light and Coke Company of Chicago," by Dr. W. E. Post.

The dinner and vaudeville entertainment will be on Thursday night the 18th. The toastmaster is Col. E. G. Pratt; and the principal speakers will be Hon. W. J. Calhoun and Mr. John Gribbel.

To avoid the rush and confusion attending the allottment of dinner reservations, it is suggested that they be made in advance. Reservations will be made in the order in which they are received, assuring choice locations to those who order early. Round tables accommodating 8 persons will be used. Make checks payable to S. H. Moore, Chairman, Entertainment Committee, 1703 Peoples Gas Building, Chicago. Tickets $5 each; and remittance for seats desired must accompany orders. HORACE H. CLARK, Secretary.

## Northampton, Mass., Rate Case.

The following from the order of the Massachusetts Board of Gas and Electric Light Commissioners in the case of the Northampton Gas Light Company, is interesting because of the comments on management and on valuations:

"This company serves a population of somewhat more than 19,000. It makes and sells a mixed coal and water gas and charges a maximum price net of $1.10. For some time before the filing of this complaint there had been negotiations between the city council and the officers of the company relative to price and service. During the course of these negotiations the company expressed its purpose to make a reduction in 1912 to $1.10 and to $1.05 provided there was a certain increase in output, and in any event by 1913. It also offered a further reduction to $1 in 1915, provided 'that the cost of material and other matters entering into the manufacture of gas, over which the company has no control, shall remain substantially the same as at present.' But these offers became involved in the question of a street lighting contract and the prices for electricity. While the promised reduction to $1.10 was made in 1912, no further reduction has been made.

"The company was incorporated in 1853, and the original capital stock of $50,000 was in part issued in 1860 and the balance in 1871. In 1869 it was authorized by special act to increase its capital to $100,000, but no additional stock was in fact issued until 1900. The outstanding capital is now $100,000, and upon the recent issues premiums amounting in all to $16,400 have been realized. On June 30, 1914, besides its plant, which was carried at a book value of $192,338, it had other assets, including tenement property, etc., of $50,409, against which there were outstanding its capital stock of $120,000, notes of $59,500 and other debts of $12,944.

"Since the company began making returns to the Board in 1885, it has never failed, except in 1887 when it paid six, to pay a dividend of at least 8%. In a number of years prior to 1908 dividends in substantial excess of 8% were paid. In 1908 its dividend rate was raised to 10 and in 1909 to 12%, a rate since maintained with a large extra dividend in 1912. Notwithstanding these dividends, a considerable proportion of the amount expended upon additions and extensions to its plant and property during this period has been provided from the earnings. Much of the original generating equipment and apparatus at the works, including the original holder, have disappeared or been replaced. The company's output during the year ending Juue 30, 1914, was 73,547,000 cubic feet, a substantial increase over the preceding year.

"At the hearings it was contended in behalf of the city that the net cost of gas supplied to customers was unreasonably high. By reductions in certain items relating to the cost of coal, office rent, management and distribution expenses, and in the allowance for repairs, renewals and depreciation it was claimed that the cost could be so reduced that at a price of 95 cents, with no increase in output, there would still be earnings available for dividends sufficient to pay 8% on the outstanding capital stock. It was further urged in behalf of the city that by reason of the increase in candle power, the abandonment of lime purification and the increase in pressure, the gas now supplied has less value to the consumer than that formerly supplied before the installation of the water gas apparatus in 1906.

"Considerable evidence was offered on both sides with respect to certain items in the operating expenses. One item was the cost of coal, and the figures under consideration were admitted by the company to include a substantial commission to the Light, Heat and Power Corporation, a company owned by the same association and acting as purchasing agent for the Northampton company. Under arrangements since consummated the management of the Northampton company has been assumed by the Gas and Electric Improvement Company, another corporation owned by the association, which undertakes, as a part of the service for which it is paid 7% of the gross earnings of the Northampton company, to purchase its supplies at cost. Another item invoked by the company was the high cost of oil then prevailing. But this cost has reached substantially its former level. Some adverse comment was also directed in behalf of the city to the rent of the office and appliance store, but the Board sees no reason for considering this an unreasonable operating expense, although to the extent to which this office is used as an appliance store, the rent seems to be an expense connected with the sale of appliances and only the net loss, if any, incurred thereby should be introduced as an operating expense, a practice which now seems to have been adopted by the company.

"Since the present management has assumed control there has been a substantial increase, however, in the general office and management expenses. These expenses, exclusive of the rent of offices, for three years preceding the change from local ownership and for the succeeding years have been in amount and computed per thousand feet as follows:

| | Amount. | Per M. sold. |
|---|---|---|
| 1908 | $5,345.25 | $.1115 |
| 1909 | 5,330.05 | .1057 |
| 1910 | 10,238.26 | .1893 |
| 1911 | 14,412.08 | .2464 |
| 1912 | 11,375.41 | .1893 |
| 1913 | 11,294.25 | .1639 |
| 1914 | 12,697.62 | .1727 |

"It is doubtless true that while this comparison is not conclusive evidence that the company's present operating expenses are excessive in this respect, yet it throws the burden upon the new management to justify the increase. The Board is of the opinion that this burden was not sustained and its investigation makes clear that not only are these costs higher than experience shows is necessary for skillful and efficient management, but that the association by the device of the management company is in fact making an unwarrantable profit on the services of these actually engaged in the management of the Northampton company. The Board in a similar situation has observed that 'the management, if it desires, may choose between profits and a high operating cost, and only the stockholders are interested as to whether a certain amount of income is retained for dividends or expended for management. But even if the public be not interested in the apportionment of a given sum between dividend and management, yet they have clearly an interest when the combination of such costs is unreasonably high.' By the arrangement now in force it is also to be noted, so far as management costs are concerned, no decrease in unit cost follows any increase in output. Full advantage of such decrease goes to the owners of the property and none to the public. In reaching its conclusion as to price the Board has been influenced by the opinion that a substantial reduction in this feature of the operating expenses should be made or the company should suffer a corresponding deduction in the return allowed.

"It is difficult to determine reliably the original cost of the company's property which it now owns and is employing for the public convenience. From the issue of the original $50,000 capital stock up to 1900 it was the company's policy to pay for all improvements and additions to its property out of earnings, charging its construction accounts into profit and loss. In 1885 at the time of its first return to this Board its plant was carried at a book value of $36,625.

"Since that year its expenditure for construction appear to have been in excess of $235,000. From these facts it is evident that the company has expended more than $270,000 upon its property in the nearly sixty years of its existence. Meanwhile certain of the buildings, holders, mains and apparatus have been displaced or are abandoned, and the company has depreciated its plant accounts in the thirty years during which it has made returns to the Board to the aggregate amount of over $90,000. It is clear that the money which the stockholders have actually invested in the business or hired for its use does not exceed in all $195,000.

"Upon this phase of the case both parties submitted valuations. That submitted by the city was based upon the estimated present 'reproductive' cost of property used by the company in its gas business, or the 'reproductive' cost of equivalent items of property capable of performing the same service equally well. To determine the present value of the property the city's expert deducted from the cost such amount as appeared reasonable for the depreciation or loss in value. The results so reached showed a reproduction cost of $220,964 and a present value of $174,904, to which was added $5,000 because the mains are now covered to a considerable extent by macadam paving. In this valuation the item of land is estimated at $26,700 and cost of the buildings at $29,000 and their present value at $23,000.

"The company submitted a valuation made by a gas engineer of considerable operating experience, who died pending the hearings and was not in consequence cross-examined upon his valuation. He undertook item by item to give the 'replacement value' of all the property owned by the company as of substantially the same date used by the city's expert. These figures were depreciated to obtain the present value of the property, presumptively based upon his examination of its condition and his experience, although not described in detail owing to his decease. For the land occupied by the gas works he used the assessors' valuation. The results reached showed a 'replacement value' for the plant of $354,777, and a

'present value' of $311,149. In this valuation the gas works land is placed at $39,300, which appears to include land under the tenement houses at $12,000, and the 'replacement value' of the buildings is estimated at $46,130 and their 'present value' at $32,750. He also valued the tenement houses, horses, wagons and office furniture, but these figures are omitted for purposes of comparison. In his testimony offered prior to the submission of his valuation he expressed the opinion that the plant was well located, in good average condition, with a capacity for double its present output, and that its capacity could be still further substantially enlarged in its present location.

"Under some circumstances the market valuation of the company's stock might offer an indication of the value of its property. In this case, however, ever since the purchase of its stock by the Massachusetts Lighting Companies in 1910 at a large premium, the stock has been withdrawn from the market and held as one of the assets against which the securities of that association has been issued. There is consequently no present established market value for the stock.

"The testimony in this case, which has been briefly and, as the Board believes, fairly described, exhibits the usual irreconcilable results reached by experts valuing property by the reproductive method in rate cases, and who of necessity realize the importance of the result to their respective employers. But if a valuation was made free from all bias, it too would have to be based upon premises and experiences open to wide range of debate. Even then its only purposes would be to ascertain a figure upon which a return might be computed, with only such aid in dealing with the rate of such return as is afforded by the demands of investors with respect to securities which, in their turn, have little or no relation to such valuation of the property which they represent.

"There is broader and the Board believes firmer ground upon which the disposition of this case may properly rest. Throughout the history of this company the laws, deliberately adopted and consistently pursued, have provided a definite scheme for the regulation of gas companies. Its foremost characteristic has been and still is a purpose to restrict the original issue of capital stock to the actual investment made by the stockholders, to prohibit stock dividends and to limit additional stock or bonds to such amounts only as are reasonably necessary for the purpose for which the same are authorized, and, in the case of stock, are required to realize the requisite amount of money in view of market conditions, all with a view of keeping down the dividend burden which the public must meet in the rate charged. It cannot be successfully claimed that these laws are in themselves confiscatory or operate to deprive the companies to which they apply of their property without due process of law or of the equal protection of the laws. Neither, in the opinion of the Board. can any sound judgment be reached of the fair return to be allowed upon a property acquired under a franchise granted and exercised under such restrictions and limitations, if their beneficial purpose is to be utterly ignored. This would be to observe one rule during the development of a company's capacity to provide adequate service at reasonable rates, and to test its effect by another and quite inconsistent rule. And yet obviously this may be the result, if valuations are relied on as the sole, primary and determining factor in the rate cases.

"A reasonable return under a policy so clearly declared and long continued is not perhaps susceptible of an absolute determination and may be such an amount to be realized from the conduct of the business as, after providing for all other necessary and proper corporate requirements, will permit a reasonable dividend to the stockholders. The reasonableness of such return is to be related not merely to what may be regarded as the value of the property but to the legitimate capital stock outstanding and representing such property, whose value is usually appreciably greater or less than the par value of the capital stock, but rarely, if ever, identical with it. Where it appears to be greater it will be found to be either to investment in plant out of income or to some unearned increment of value in the plant from causes arising outside of the corporation itself. The manner in which such value has been created, the policy pursued in the issue of securities, the intelligence, honesty and prudence of the management—all have an important bearing on the amount of the return divisible among the stockholders and of necessity will lead to apparently different results in different companies, and in the same company at different times. This is the only policy having due regard to a proper reward for efficiency which seems to the Board to afford effective stimulus to recognition by managements of common interests of both stockholders and consumers.

"It is true that courts have decided rate cases in which little or no evidence was offered save with respect to the values of the properties involved based upon their reproductive costs. But they have not yet said this is the only test or even that the trial court or the public board, whose action is questioned, must reach and state a definite finding as to value. Other elements have been expressly enumerated as 'matters of consideration * * to be given such weight as may be just and right in each case.' A price is to be held confiscatory, if at all, because it may fairly be expected in its effect upon future business to operate to deprive the company of the reasonable earning power of its property. It is illogical to capitalize earning power as a test of value when the basis of earning power, the rate or price, is itself in question. But it is equally fallacious to assert broadly that cost of reproduction is the sole controlling test of earning power, especially when the price yields all that the capital employed under the restrictions and limitations, which have been described, has ever required. In this proceeding the issue is the price to be hereafter charged by this company, and the value or original cost of its property, the market value of its stock or any of the other factors which have been considered are important only so far as together they aid to a correct conclusion as to a price which shall be fair alike to the company and the public. Of necessity this conclusion must rest until vindicated by by experience not in a mathematical demonstration, but in the exercise of a sound judgment.

"Concretely the company is defending its present price upon a basis which logically gives an indefensible right to increase that price, even though the maintenance of the present price is not necessary for the payment of the liberal dividends heretofore regularly paid. Such a result is not required to avoid the charge of confiscation and would be unfair to the public. In view of all the circumstances of this case and of what has been said, not only with respect to the question of return, but of reasonable operating expenses, the board is of the opinion that the price hereinafter recommended is fair and reasonable and will yield enough to provide for all proper operating expenses, including depreciation and a fair return upon the value of the property which it is actively and necessarily employing for the public convenience.

"While some evidence was submitted and views expressed at the hearings with respect to depreciation, the board has not deemed it necessary to discuss this matter specifically. But due consideration has been given to this problem because it has an important relation to the physical condition and efficiency of the property and to the provision to be made in the future earnings. The board has also been influenced in this consideration by the amount of the provision heretofore made therefor by the company out of its earnings, by its expenditures for repairs and by the capacity of the present plant to take care of a very considerable increase in output without any substantial increase in investment.

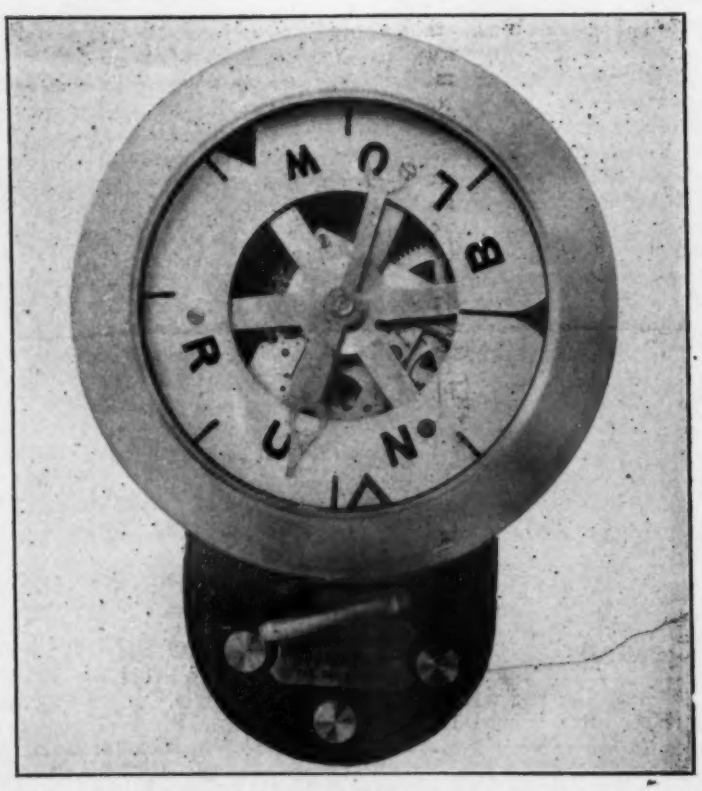
"The board recommends that on and after the first day of February next, the net price of gas sold by the Northampton Gas Light Company shall not exceed one dollar ($1) per 1,000 cubic feet."

## Timer for Water Gas Generator.

The device, which was exhibited at the meeting of the New England Society of Gas Engineers, consists of a 24 hour clock movement carrying a hand which makes one revolution in about 8 minutes and a movable dial carrying adjustable clips or markers, the whole mounted in a dust proof brass case.

The movement of the dial is entirely independent of the clock movement, and controlled by three stops that act on a spindle turned by hand in a manner similar to the notches on a controller. These stops permit the dial to be advanced 1 minute, 1½ minutes or 2 minutes, by turning the spindle one notch.

In operating a water gas generator, the gas maker sets the timer so as to bring his machine "in step" with the other machines in the house. When the hand reaches the fixed mark between the words "Run" and "Blow," he begins the Blow, which is continued until the movable clip or marker is reached, when the Run is put on. This clip has previously been set at a desired point, dividing the time of a complete cycle of operations in desired proportion. The Run is then continued until the fixed mark is again reached. A second clip, painted differently from the one mentioned above, is provided to indicate the time of reversal from down to up Run. The operation is continued in this way until the generator is to be coaled. During the coaling operation the hand is encroaching on the time allowed for the blow, and to offset this and to provide an additional length of blow after coaling if desired, the gas maker turns the spindle of the timer one notch, thus advancing the dial 1, 1½ or 2 minutes as may be determined, and thus adding to the length of the Blow.




The time of revolution of the hand was stated as about 8 minutes, in timers built without special orders this time is $8\frac{1}{3}$ minutes approximately, fixed as being as short a cycle as it was advisable to use, on account of the labor of changing valves, etc.

The advantages claimed for the apparatus are:

*Absolute Control of Time.*—It is impossible to split minutes into small fractions with ordinary clocks; and many times the gas maker makes mistakes in addition, even if he is able to read the ordinary clock with sufficient accuracy.

*Relief of the Gas Maker.*—The gas maker is not obliged to spend part of his time calculating when to begin and end runs.

*Ease of Operation.*—In case of absence of the regular gas makers, or inability to obtain experienced men, other men can much more quickly learn to operate with the "timer."

*Keeping Machines "In Step."*—Several generators can be run in the proper relation to each other with regard to ease or running of blowers, etc., since with the "timer" the gas maker is not limited to the use of the minutes or half minutes of actual time.

*To Sum Up.*—Everything else is measured with more or less accuracy. Why not measure the time?

In blasting a generator, the rate of flow of the air through the fire has a very important bearing on the results. With a given rate of flow, absolute control cannot be had unless the time of blow can be fixed at any desired length. This cannot be done with the ordinary clock, except accidentally, when the answer to the problem happens to come in even figures.

The "timer" insures absolute control.

## Synthetic Crude Oil.

At the technical session of the American Institute of Mining Engineers in New York, Dr. W. O. Snelling reported the results of some experiments in the production of synthetic "crude oil" from heavy hydrocarbons, such as vaseline, rod wax, gas oil, fuel oil, etc. From these hydrocarbons, low in hydrogen, he has repeatedly obtained a synthetic crude oil from which gasolene aggregating from 50 to 70% was obtained by successive reconversions of the residue into synthetic crude oil, the excess carbon separating out as mud. In the operation there is a concurrent production of natural gas to the extent of about 2%.

Dr. Snelling's discovery followed an abortive experiment made for a different purpose some years ago, when a vessel partially filled with a heavy oil, when heated to 450° C. and opened, was found to contain a product that looked like crude oil. It was green by reflected light and a rich red-brown by transmitted light, and further examination indicated that it was similar to crude oil in its constitution as well as in appearance.

Difficulty was experienced in reproducing the conditions to give the accidental result obtained, but after considerable experiment, it was found that a certain relation between the size of the vessel and the volume of the hydrocarbon was necessary. With the vessel three-quarters or one-half full the reaction failed, but when the vessel was about three-elevenths full and heated until the pressure gage indicated 800 to 900 pounds per square inch, the result was a greenish oil containing about 15% of gasoline and other distillates in approximately the percentages in crude oil. A remarkable feature is that the synthetic oil can be repeatedly distilled and reconverted so that first 18% of gasoline, then 15%, then 12%, etc., are successfully obtained until 50 to 70% of the original hydrocarbon is obtained as gasoline of about 70° Bé. Using paraffin, the final yield was 70% and about 30% of "natural gas."

Doctor Snelling concludes that when a hydrocarbon body occupying more than one-tenth and less than one-half of a closed vessel is heated to a pressure of 800 to 900 pounds, a fundamental change occurs; the hydrogen and carbon atoms being free to rearrange themselves, form a more or less definite mixture of hydrocarbons, in appearance and constitution not unlike crude oil. There is a residual pressure of about 150 pounds in the vessel after cooling, due to the formation of about 2% of gas. He also suggests that natural crude petroleum may in some instances have been produced by some related process, perhaps by lower temperatures acting through geologic agents: also that the natural gas associated with petroleum might have a related origin analogous to that produced with the synthetic crude oil. Time has practically no effect on the reaction, which was complete in vessels that were quenched in water as soon as the gage reached 800 pounds. The crude oil formed contains proportionately more hydrogen than the heavier oils, and as the latter were already deficient in hydrogen, much of the carbon finds no hydrogen to combine with and hence separates out as "mud."

The gasoline distilled from the synthetic crude oil is normal in color, but different in odor, though nothing like that of "cracked" volatile products. The odor of the Snelling oil and of its distillates is milder and sweeter than that of natural petroleum and its products. The Doctor exhibited samples of a yellow lubricating oil and the products made therefrom. The gasoline produced is reported to be suitable as motor spirit and other customary uses of normal gasoline. It is water-white in color and some that has stood over one year has not changed color nor altered in any other respect.

While the process has not yet been developed to definite conclusions on many points, Doctor Snelling announced that through the interest of Mr. John T. Milliken, of St. Louis, further research has been made possible, and that commercial experiments had now been undertaken at Vinita, Okla.

## Increased Gasoline Yield and Toluol from Petroleum.

Secretary of the Interior, Lane, announces the discovery by the Bureau of Mines of two chemical processes, one of which will greatly increase the available supply of gasoline, while the other may make the United States absolutely independent of the rest of the world in materials necessary for the dye industry and the manufacture of high explosives.

The first of these processes promises to enable the independent refiners to increase their output of gasoline 200% or more, which with an estimated production on their part of 12,000,000 barrels of gasoline in a year, this will mean an output from the independents alone of 36,000,000 barrels, more than the total production to-day from all sources. The second process includes the manufacture from crude petroleum of toluol and benzol, heretofore obtained from coal tar or coal gas. As Germany has specialized far beyond other countries in by-products from coal, the rest of the world have been dominated by her as regards toluol and benzol products, which are the bases for the production of dye stuffs and high explosives. The discoverer of these processes is Dr. Walter F. Rittman, chemical engineer of the Bureau of Mines, and the work was done at Columbia University, New York, the facilities of the laboratory there having been turned over to the Federal Government by President Nicholas Murray Butler.

Application to patent these processes has been made by Dr. Rittman on behalf of the Federal Government in order to prevent monopoly in their use, the patents to be dedicated to the American people.

"These processes," says Secretary Lane, "are fraught with the utmost importance to the people of this country. For some time

the Standard Oil Company, through its employment of experts and its extensive organization, has had a big advantage over the 'independents' in the production of gasoline, having a patented process that obtains nearly three times the usual amount of gasoline from a given quantity of petroleum. Now the Federal Government proposes to make free for the use of all the people of this country a process that is confidently expected to increase the yield of gasoline from petroleum fully 200%, and it is claimed that the process is safer, simpler and is more economical in time than processes now in use. With a steadily increasing demand for gasoline for automobiles, motor boats and stationary engines, this discovery comes at the proper time. Only two years ago the automobile industry, fearful that the supply of gasoline might not be adequate for its rapidly expanding business, offered through the International Association of Automobile Clubs, a prize of $100,000 for a substitute that would cost less than gasoline. Happily the urgency of this situation has passed, and at present there is a plentiful supply of motor fuel, and this new process adds the hope that in spite of the growth of its use there will not be any shortage in the future. When it is realized that the gasoline industry in this country each year yields products of between $100,000,000 and $150,000,000, the importance of this discovery is seen.

"The second process discovered by Dr. Rittmau may prove of even more value than the first, in that it suggests the establishment of an industry in which Germany has heretofore been preeminent—the dye industry; and also promises indirectly a measure of national safety of incalculable import. Among necessary ingredients of high explosives used in modern warfare toluol and benzol are of the first rank. Heretofore these products have mainly been obtained in Germany and England from coal tar, and explosives manufacturers have had to depend largely on the supply from these sources. I understand that some toluol and benzol have been obtained from American coal and water-gas tars, but this supply does not begin to satisfy present demands. The Federal Government now proposes to obtain the toluol and benzol from crude petroleum also, and I am informed that the supply can be made sufficient not only for the entire American trade but also for other purposes. This process has gone far enough to indicate that the products can be produced at a reasonable cost, and the real comforting thing is that this new source of supply is at the command of our people, and if the nation is ever called upon to defend itself, we will be able to manufacture the most efficient and most powerful explosives known in warfare.

"Dr. Rittman concludes from his experiments that this process may become more economical than the German method of obtaining these products from coal tar, and as it not only makes toluol and benzol, but also gasolene in considerable quantities, he intimated the possibility of gasoline being an important factor in paying the costs of the process. If this should prove to be true, it may result in eventually giving the United States the supremacy in the dye-stuffs industry that has for some time belonged to Germany."

## Recent Patent Issues.

**Prepared for the American Gas Light Journal by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.**

1,125,919. Gas Producer. H. F. Wallmann, Chicago, Ills., assignor of one-half to A. W. R., and H. H. Wallmann, same place.

1,125,962. Art of Generating Gas. W. B Chapman, Brooklyn, N. Y., assignor to Chapman Engineer Co., New York, N. Y.

1,126,142. Gas Stove Igniter. A. W. Weber, Jackson, Mich.

1,126,215. Method of Increasing the Flow of Gas and Vapors from Wells. H. D. Hildebrand, Pittsburgh, Pa., assignor to Hope Engineering and Supply Co., same place.

1,126,299. Automatic Gas Valve. F. J. Schmidt, Cleveland, O.

1,126,593. Gas Range. J, S. Van Buren, Albany, N. Y., assignor to Abram Cox Stove Co., Philadelphia, Pa.

1,126,617. Gas Heater. E. Cole, Los Angeles, Cal., assignor to Cole Mfg. Co., same place.

1,126,914. Gas Valve. J. J. Sullivan, Holyoke, Mass.

1,126,939. Vacuum Gas Burner. W. E. Batton, Mooringsport, La.

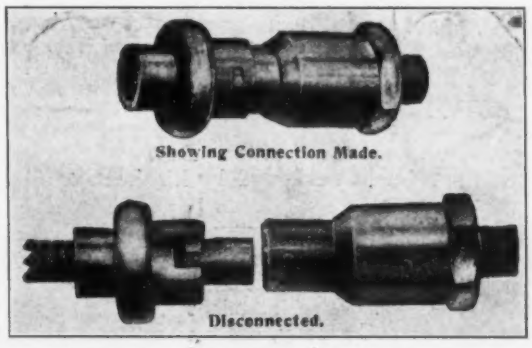
1,127,455. Gas Burner. F. Krauss, Munich, Germany.

1,127,476-77-78. Gas Lighting Device. C. F. Mason, Cortland, N. Y.

1,127,949. Process of Making Coke and Recovering By-Products. C. A. Weeks, Philadelphia, Pa., assignor to T. R. Patton and F. C. Mencke, same place.

## New Methods and Appliances.

An English "Gas Plug."—The "Baseco" gas plug is thus described in the "London Journal": "With the increasing number of uses to which gas is put in the household, it is only reasonable to anticipate a growing demand for interchangeable connections. The "Baseco" gas plug has been devised with the object of obtaining by as simple means as possible a supply of gas in any required position. This, of course, enables consumers, with only one or two permanent gas supply points in a room, to utilize at will lights, fires, irons, boiler-rings, grillers, or any other efficient labor-saving devices which gas places within their reach; and it also permits the lighting fittings to be removed and replaced when desired.




There are no complicated parts through which trouble could arise; and the male part of the interchangeable union valve can be instantly detached by a one-eighth turn from the fixed female part, and plugged to any other position where a female part is installed. As the seat or valve is in the female part, the arrangement is interchangeable without any possibility of leakage. The act of giving the necessary one-eighth turn to detach the male part, closes the valve in the female part; so that no chance arises of leaving the gas turned on after it has been disconnected.

Protection of Pipe Lines in Alkali Soils.—Pipe lines in the West have frequently to be run in alkaline soil, and the effect of the alkali is to corrode the pipe, in some cases rendering it useless in a few years. Various attempts have been made to cover the pipe to prolong its life. Asphaltum paint has not been successful; crude oil runs off through the soil; quick-setting bituminous enamels put on in a fairly thick layer have had some success, but cannot be applied to cold or wet pipe. The most successful method employs specially prepared roofing paper, applied to the pipe in a spiral wrap or with a longitudinal lap. In the spiral wrap the paper is cut into the desired width, 3 to 12 inches, in lengths of from 50 to 100 feet. As soon as the pipe is joined, and before lowering into the ditch, it is coated with hot asphaltum and the wider strip is wound on spirally before the asphaltum sets. An open joint is left in this spiral, and it is again coated with hot asphaltum and a 3-inch strip wound over it as a batten. The asphaltum is a thin grade of the ordinary refined product, applied at about 200° F., of such consistence that it will not set for about five minutes after application. At the pipe joints 3-inch strips of paper are wound around the pipe on each side of the coupling until a shoulder is built up flush with the outer circumference of the collar; the sleeve and shoulder are then coated with hot asphaltum and covered with a 12-inch strip of paper, which is fastened down with wire, as are also the ends of the spiral strips.

The longitudinal lap system has also been extensively used. For this the paper is delivered in rolls about 6 inches wider than the pipe circumference and about 72 feet long. The paper is applied by coating the pipe with hot asphaltum, wrapping the paper around it and sticking it down with the same material. The lap is always made on the top of the pipe, with the outer edge looking down, and is wired about every 16 inches in order that the weight of the paper itself will not pull it away from the pipe. The pipe couplings are protected by building up shoulders as in the spiral wrapping.

Metric Units can be easily remembered by the general rule that many of them are approximately 10% greater than English units in common use. Thus the kilogram is about 2.2 lb., the metric ton 1.1 short tons and the meter 1.1 yd. The liter is a little more than 1.05 quarts. To convert miles into kilometers multiply by 1.6; to convert cu. in. to cu. cm. multiply by 16.

## ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

MR. JOHN H. MANSUR, President of the Keystone Meter Company, died at his home, Royersford, Pa., on February 28th, after an illness of some five months. Mr. Mansur was born in Cearnarvon Township, Berks County, Pa., May 25th, 1842, but his parents returned to Philadelpnia soon after and resided there permanently, where he attended the public schools until 1856. Upon leaving school he learned the trade of gas meter making and worked at it until the breaking out of the Civil War, when he enlisted in Co. D, 75th Regiment Pennsylvania Volunteers for 3 years. He was transferred to the U. S. Signal Corps in 1862 and served in that branch until the expiraiion of his term of service. On his return from war, he again took up his trade in the employ of the W. W. Goodwin Company, gas meter manufacturers, being Superintendent of their plant for a number of years. After that firm retired from business Mr. Mansur was connected with the old Philadelphia Gas Works, and served them until 1890, when he removed to Royersford, Pa., and established the Keystone Meter Company, and was President of the company at the time of his death. Mr. Mansur, besides being a successful business man, was an ordained clergyman, a banker and a member of several gas associations. He was well known for his charitable and benevolent work, and by his death the gas industry loses one of its pioneers.

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THE Southern Commercial Congress will be held in Muskogee, Okla., this year, and President Wilson has signified his intention of attending the Congress. Superintendent J. F. Owens, of the Muskogee Gas and Electric Company, has been named Chairman of the Committee on Public Entertainment.

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THE Syracuse (N. Y.) Lighting Company is contemplating the expenditure of approximately $50,000 in the installation of new gas mains and electric extensions, the work to be started just as soon as weather permits. The work will be done mostly in new streets on the outskirts of the city, and the plans for the work have already been completed.

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THE Baltimore Gas Appliance and Manufacturing Company, makers of "Oriole" ranges, etc., has completed legal arrangements to expand into a $1,000,000 corporation and to secure the additional capital. The company started 3 years ago as a new industry in Baltimore, with a capital of $300,000, and its growth has been steady and sure, until now it ranks among the large enterprises in its line of business in the country. Proceeds from the new financing will be used in the erection of an extensive factory building adjoining the nine buildings now used by the company. This building, which is already under construction, will cover an area of 135 by 215 feet, giving additional floor space to the extent of three-quarters of an acre. This plant addition will include display rooms and offices, in addition to needed manufacturing space.

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SUPERINTENDENT J. B. JONES, of the Bridgeton (N. J.) Gas Light Company announces that an order has been placed for materials which will be placed on South Pearl Street at the time the city re-lays the paving blocks upon that thoroughfare. A new gas main will replace the present one, and the company will run new service pipes to the curb for every consumer of gas, and will anticipate any new pipe laying that is likely to be necessary.

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MANY of the older readers of the AMERICAN GAS LIGHT JOURNAL will remember Mr. John Gimper, for many years Superintendent of the Galveston (Texas) Gas Company, and prior to that in a like capacity at Leavenworth, Kansas, and Springfield, Missouri. He was a charter member of the Western Gas Association and one of its leading men when it was merged with the American Gas Institute. About six years ago Mr. Gimper decided that he had worked long enough and retired to Pasadena, California, to spend the balance of his life quietly. But the old war-horse found that he was still appreciated by many people, and last month allowed himself to be elected to the presidency of "The California Glass Insulator Company" of Long Beach, near Los Angeles. The Company may be congratulated to have secured Mr. Gimper's services, for while he was a "Gas-man" and now will be a "Glass-man," there is no word like "Failure" for Mr. Gimper. He is bound to be a success in whatever he undertakes.

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THE Cleveland, Tenn., City Council has granted the request of S. E. DeFrese, manager of the Chattanooga Gas Company, to be allowed to submit a proposition at an early meeting looking to the establishment of a gas plant in Cleveland. It is said the proposed enterprise is in no way connected with the Chattanooga Gas Company, being an individual proposition from Mr. DeFrese, and the latter contemplates being associated in the enterprise with a number of well-known Cleveland business men. So far the matter has gone no further than merely the expression of the council's willingness to hear the proposition.

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MR. FRANCIS H. DEWEY will succeed the late Charles D. Lamson as president of the Worcester Gas Light Company. He has been fulfilling the duties of president since Mr. Lamson's health began to fail him, nearly a year ago. Mr. Dewey is president of the Mechanics National Bank and president of the Worcester Consolidated Street Railway Company, but it is not thought that the duties of these offices will keep him from accepting the position of president of the Gas Light Company.

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A gas bill rendered in October, 1875, for $2.45 was paid last week to the Public Service Company through the mail in Jersey City with two $1 bills and 45 cents in stamps. The bill was sent out by the Peopie's Gaslight Company, which was absorbed by the Hudson Gas Company, a subsidiary of the Public Service Company. The rate at that time was $3.50 per 1,000 cubic feet.

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AT the annual meeting of the Fairmont Gas Company in Baltimore James O. Watson, of Fairmont, W. Va,, was elected president of the company, succeeding Mr. Jere H. Wheelwright, who was president of the company until he resigned so that he might give his entire time to the Consolidation Coal Company, which has under consideration plans for a year of wonderful development.

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THE Compressed Gas Manufacturers' Association wants manufacturers of valves, cylinders, recording gauges and material and appliances which enter into the manufacture, transportation and sale of compressed gases, to send catalogues, price lists and descriptive details to the Secretary of the Association, at 25 Madison Avenue, New York.

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THE Evansville (Ind.) Public Utilities Company, has filed a petition for a restraining order to prevent the Public Service Commission from putting in force the 85-cent gas rate. The company declares it cannot operate under the 85-cent gas rate and asserts the yearly loss will he $20,000, in addition to the added difficulty of disposing of bonds under the handicap imposed by the rate. The complaint alleges the company's property was valued at $750,000 by the commission, when the real value was $1,400,000. The action is said to be a surprise to the city officials, who had generally understood that the rate was acceptable to the company.

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MR. S. J. DILL, Vice-President of the United Gas and Electric Company, who will manage the affairs of the engineering corporation of that company in the South, has gone to New Orleans, and will make that city his permanent home. He will have charge of all business in connection with the engineering, construction and improvements of the American Cities properties in New Orleans, Houston, Little Rock, Memphis, Knoxville and Birmingham.

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THE Chattanooga (Tenn.) Gas Company is distributing pipe for its main to connect the company's plant with the Chattanooga Gas and Coal Products Company in Alton Park. It contemplates having the pipe line completed and in readiness to supply the Chattanooga Gas and Coal Products Company with gas for drying out the coke ovens and starting them in operation until a self-produced supply of gas is obtained. Then the coke ovens will supply the Chattanooga Gas Company with 2,000,000 cubic feet of gas daily.

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ALL the officers of the Laclede Gas Light Company were re-elected at the annual directors' meeting: President and General Manager, C. L. Holman; Vice-President, G. H. Walker; Secretary and Treasurer, W. H. Whitton; Assistant Treasurer, W. S. Dodd. At the annual stockholders' meeting the old directors were re-elected. They are D. R. Calhoun, Murray Carleton, Alonzo C. Church, Edward A. Faust, W. C. McBride, Edward Mallinckrodt, James E. Smith, R. H. Stockton, G. H. Walker, Rolla Wells, F. O. Watts, Thomas H. West and C. L. Holman.

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"STOP THE LEAKS" was the slogan at a meeting of the employees of the Leominster (Mass.) Electric Light and Power Company and the Leominster Gas Light Company, when President Al-

fred Clarke of the Massachusetts Lighting Companies gave a practice talk on "Waste." The local companies had present as special guests several employees of the Clinton Gas Light Company and of the Ayer Electric Light Company. The meeting was one of a series conducted for the purpose of raising the standard of efficiency of the companies in Leominster, and the creating of the best social and business relations between the heads of the departments and subordinates, in order that the best possible service can be given to the people when they want it and as they want it.

MR. HOWARD S. REESIDE, President of the Washington (D. C.) Gas Light Company denies reports that the United Gas Improvement Company has obtained control of the Washington Gas Light Company or will have any voice in its management. The rumors, he said, probably arose from the fact that he had retained the services of the United Gas Improvement Company to make an inspection of the Washington plants. "The service the Philadelphia company is to perform for our company," Mr. Reeside said, "is the same sort of service it performs for numerous other companies. The Philadelphia company are engineers and builders of gas plants and are known as experts in that direction. We have sought their professional engineering advice and opinion, and to give it one of their engineers and superintendents is in Washington looking over our plants."

THE Citizen's Lighting Company, La Salle, Ills., announces reduced rates for that city effective for February consumption. They are: For first 5,000 cubic feet, $1.15 per 1,000 net; $1.25 gross. For next 50,000 cubic feet, $1.05 per 1,000 net; $1.15 gross. For all over 55,000 cubic feet, 85c, per 1,000 net; 95c. gross. To obtain the net price bill must be paid before the 10th of the following month. The present rate is $1.25 per 1,000 net; $1.50 gross.

D. MCDONALD & CO., meter manufacturers of Albany, N. Y., have completed the installation of a station meter at the gas plant of the Torrington (Conn.) Electric Light Company. The meter replaced was installed in 1899.

THE Lititz, Manheim and Ephrata (Pa.) Gas Company has been reorganized, and George C. Gochnauer, of Harrisburg, was elected superintendent. The plant is in excellent working condition, and it is the purpose of the new board to extend its facilities.

MR. ARTHUR NORTON, of the Nathaniel Tufts Meter Company, was the speaker at the last meeting of the Suburban Gas and Electric Club, Revere, Mass. Having been interested in the manufacture of gas meters for many years, his talk was practical, and the working of a gas meter was shown by an all-glass model, which was in itself a remarkable bit of mechanism. After Mr. Norton's address an instructive talk on the care of autos and garage was given by Mr. Carl White.

THE board selected to arbitrate the price-of-gas question in Galesburg, Ills., has had a preliminary conference. W. J. Hagenah, of Chicago, is the third member of the committee, L. E. Fisher for the McKinley interests and William J. Pringle for the city, having been previously selected. Mr, Hagenah has had considerable experience along this line, being the engineer who handled the same proposition for Chicago 2 years ago.

A CHARTER has been granted to the General Gas Improvement Company, Wilmington, Del., capital stock, $300,000, to produce and distribute artificial gas and its by-products. Incorporators, Charles B. Bishop, Clarence J. Jacobs, Harry W. Davis, all of Wilmington, Del.

THE American Gas Company announces these changes in its force as of March 1st.

Mr. C. E. Waldron, of Phoenixville Pa., becomes assistant manager at Kingston, N. Y.

Mr. T. E. Spencer, of Pottstown, Pa., is manager at Phoenixville.

Mr. G. Brenner, of Plymouth, becomes manager at Pottstown.

AT the annual meeting of the Meriden (Conn.) Gas Light Company the present officers and directors were re-elected and routine reports read. The officers are: President, Charles F. Linsley; secretary-treasurer, George M. Curtis; general manager, Charles A. Learned; directors—C. F. Linsley, George M. Curtis, E. J. Doolittle, Edward Miller, John L. Billard, Charles A. Learned, Clarence P. Bradley.

## UTILITIES COMMISSION NEWS.

REDUCE COMMISSIONERS' SALARY AND COMBINE WORK.—The Howard Economy Committee of the Ohio Legislature has decided to recommend a reduction of the salaries of members of the Public Service Commission from $6,000 to $5,000 each per year. It will also recommend that the salaries of engine and boiler inspectors be reduced from $2,160 to $1,800, and that in the bureau of inspection only two men shall receive $2,500 each instead of three as in the past.

The proposition to combine the Public Utility Commission and the State Tax Commission, advanced recently, is meeting with favor on the part of some utility men. With one commission only, one set of reports would be needed, doing away with much work and expense, and there is likelihood that one valuation would be used for both rate-making and taxing purposes.(?) With the two commissions, some companies have had their properties appraised high for tax purposes and very low in rate cases.

MUST PRINT NOTICES EXACTLY.—An order has been issued by the Pennsylvania Commission providing that persons publishing orders of the commission for direction of patrons or the public must print the exact wording. The order says: "It having come to the attention of the commission that certain public service companies have been sending out written or printed notices or other such communications to their patrons in which they have attributed to the commission the making of alleged rulings, regulations or orders which in point of fact have not been made by the commission as represented, and thereby have occasioned misunderstanding, confusion and inconvenience to their patrons and the public in various matters, but especially with regard to the time and manner of payment of bills subject to discount, it is hereby ordered that the above practice shall be discontinued."

FOR CONNECTICUT RULES.—Upon the initiative of the Public Utilities Commission, about 100 representatives of water, gas and electricity corporations throughout Connecticut, attended a hearing last month, and a committee of seven, representing all utilities was appointed to compile rules and regulations for the respective utilities and to submit the tentative compilation to the commissioners at future hearings assigned for that purpose.

Concerning complaints of service the commission gave out the following statement in the call for the conference.

"It having appeared to the commission that there was a lack of adequate or uniform rules and regulations governing the supply of service by gas, electric and water companies, a tentative or proposed draft of general order and rules and standards of all such utility companies and additional special rules for gas companies has been prepared by the commission. It is desired that the several companies interested examine these and be prepared to make such criticisms of and suggestions or changes in said tentative order, rules and regulations as may appeal to them at a hearing to be held by the commission."

CALIFORNIA SUPREME COURT UPHOLDS COMMISSION IN COMPETITION CASE.—The Supreme Court of California has sustained the right of the California Railroad Commission to refuse the Oro Electric Corporation a permit to do business in Stockton, in competition with the Western States Gas and Electric Company. This case originated in 1913, when the Corporation applied to the Commission for permission to operate, having previously obtained a franchise from the City of Stockton. April 29, 1913, the Commission entered an order in favor of the Oro Company for territory outside Stockton, except a certain adjacent region. In this territory the Western States Company was given 90 days to complete certain construction, and in August the Commission held that the inhabitants of Stockton were being adequately and satisfactorily served and refused a certificate to the Oro Company. The latter company then petitioned the Supreme Court, attacking the Commission's order on a variety of grounds, but in the rehearing of the case secured by the Commission, it narrowed down to the question whether, under the reservation to incorporated cities of certain powers over utilities, the requirement of a certificate was a prerequisite to the right of the petitioner to engage in the business of furnishing electric energy within Stockton.

The Railroad Commission authorized an interview concerning the decision in which it says, "It means that the policies of the Railroad Commission, based on a State-wide view, cannot be thwarted by purely local considerations, and that henceforth the Commission will not necessarily be bound to permit the impairment of an existing public utility service, if it is just and reasonable, by admitting a new public utility into the field unless the interest of the public clearly so requires."

# Financial Notes.

THE combined net earnings available for the dividends of the subsidiary companies of the MASSACHUSETTS GAS COMPANIES for January were $267,403, a decrease of $6,916, or 2.52%. Net earnings for the 7 months ending January 31, were as follows:

| | 1914-15. | 1913-14. |
|---|---|---|
| Boston | $811,758 | $700,337 |
| East Boston | 44,442 | 39,597 |
| Newton | 31,626 | 25,515 |
| Quincy | 29,042 | 15,007 |
| New England Gas | 349,476 | 438,221 |
| New England Coal | 207,420 | 266,728 |
| Federal Coal | 60,290 | 45,295 |
| Boston Tow Boat | 30,039 | 17,344 |
| Total | 647,227 | 767,589 |
| Grand total | 1,564,097 | 1,548,048 |

THE SARANAC LAKE GAS COMPANY'S plant franchise, mains and other property; will, if the U. S. Court, Northern New York District, approves, be controlled by the same interests as before bankruptcy proceedings were instituted 3 years ago. The sale in bankruptcy took place at the company's plant and brought one bid, $40,000, the minimum price set by the court. Mr. McNeil, of Poughkeepsie, N. Y., and Mr. Wetterau, of Philadelphia, Pa., own the majority of stock in the company, and jointly offered the bid of $40,000. The price offered is subject to the approval of Nash Rockwood, Special Master appointed by the Court and of the Court itself.

THE AMERICAN GAS COMPANY has declared a regular quarterly dividend of 1¾%, or $1.75 per share, payable March 1 to stock of record February 17.

AN issue of $1,400,000 convertible debentures, bearing interest at 4% per annum, redeemable in stock July 1, 1918, share for share, is offered, at par $50, to stockholders of the PROVIDENCE GAS COMPANY, of record May 1, 1915, the ratio being 2 in 7. In the exent of any new issue before maturity of the debentures the latter would share equally with the stock.

As the present capital of the corporation is $4,900,000, the new issue will, at maturity, in 1918, increase the capital stock to $6,300,000. For some time past a capital increase has been expected and the old shares recently sold up to $101, but this week, both before and after the news came out, the stock sold at $99.

It is estimated, unofficially, that the "rights" or the old stock (the privilege of subscribing to the new debentures at par) will be worth about $9 per share. This is the first time that the gas corporation has put out a straight debenture issue, but a few years ago it issued new stock, payable in installments, over nearly the same period of time, and not becoming 8% stock until maturity.

THE CONSOLIDATED GAS, ELECTRIC LIGHT AND POWER COMPANY of Baltimore declared the regular quarterly dividend of 1¾% on the common stock and the usual semi-annual dividend of 3% on the preferred stock, both payable April 1.

THE LYNN GAS AND ELECTRIC COMPANY is in a fortunate position in that it is able to purchase its coal at tidewater prices. In 1914 its expenses amounted to 70% of its gross earnings, and net earnings were $366,825. Its dividend requirement on its $1,182,500 capital stock amounts to $236,500, as it pays at present 20% on its capital. Its earnings on the capital stock for the past year, therefore, show a margin of safety of 11%, as it earned 31%. This is an exceptionally high earning ratio for a public utility and were it not for the fact that the price of gas in Lynn is lower than almost any other city in the State, it would be liable to be subject to attack from political agitators. The price of gas in Lynn is 75 cents per 1,000. The interest yield on its present stock price of 460 is about 4.35%.

THE PUBLIC SECURITIES COMPANY of Chicago has passed the regular semi-annual dividend of 3½% on the preferred stock. The company is a New Jersey corporation. Its business is the financing of gas, electric light, hydro-electric and kindred enterprises. The preferred issue amounts to $2,500,000.

AN application of the SANTA BARBARA (Cal.) GAS AND ELECTRIC COMPANY to issue, sell and deliver bonds was presented to Commissioner E. O. Edgerton of the State Railroad Commission. The issue sought amounts to $100,000 for refunding and improvement purposes.

STOCKHOLDERS of FALL RIVER GAS WORKS COMPANY have authorized issue of 3,220 shares new stock at $200 per share to be offered shareholders in the proportion of two-fifths of a new share for each present share. Proceeds will be applied to payment of floating debt incurred for additions and extensions.

# CONTENTS.

AN ASTERISK (*) DENOTES AN ILLUSTRATED ARTICLE.


*THE NEW COAL GAS INSTALLATION AT FALL RIVER, by C. W. Hunter ..... 145

RELATIONS WITH CUSTOMERS ..... 149

EDITORIALS ..... 152
You Must Keep the Lighting—High Pressure Gas Lighting at the Panama-Pacific International Exposition—National Commercial Gas Association Directors' Meeting—Beal Medal Committees—New England Section, National Commercial Gas Association.

OFFICIAL NOTICES—
Indiana Gas Association ..... 153
Illinois Gas Association ..... 153

NORTHAMPTON, MASS., RATE CASE ..... 154

*TIMER FOR WATER GAS GENERATOR ..... 155

SYNTHETIC CRUDE OIL ..... 156

INCREASED GASOLINE YIELD AND TOLUOL FROM PETROLEUM ..... 156

Recent Patent Issues ..... 157

NEW METHODS AND APPLIANCES ..... 157
*An English "Gas Plug"—Protection of Pipe Lines in Alkali Soils—Metric Units.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES ..... 158
Death of Mr. John H. Mansur—Southern Commercial Congress—Syracuse, N. Y., Extensions—Baltimore Gas Appliance Makers—Bridgeton, N. J., Relays—Mr. Gimper at Work Again—Cleveland, Tenn., Wants Gas—Mr. F. H. Dewey to Succeed Mr. Lamson—Interest Not Included—Mr. Wheelwright to Devote Himself to Consolidation Coal Co.—Compressed Gas Mfgs. Association—Evansville, Ind., Company Objects to Order—Mr. Dill in New Orleans—Chattanooga Pipe Line—Laclede Gas Light Officers—Stop the Leaks—Washington Consults U. G. I.—Reduced Rates in La Salle—McDonald Meter at Torrington—Mr. Gochnauer Superintendent—Mr. Norton at Revere, Mass., Meeting—Arbiters at Galesburg, Ills.—American Gas Company Shifts—Meriden, Conn., Officials—and Other Items.

UTILITIES COMMISSION NEWS ..... 159
Reduce Commissioners' Salary and Combine Work—Must Print Notices Exactly—For Connecticut Rules—California Supreme Court Upholds Commission in Competition Case.

Financial Notes ..... 160

Public Lighting Table for March, 1915 (Ad. Section) ..... 7

Meeting Times of the Various Gas Associations (Advertising Section) ..... 21